INTERNATIONAL NEURAL NETWORK SOCIETY

IJCNN2023

INTERNATIONAL JOINT CONFERENCE ON NEURAL NETWORKS

18–23 JUNE 2023 | GOLD COAST CONVENTION AND EXHIBITION CENTRE, QUEENSLAND, AUSTRALIA

IJCNN 2023 CONFERENCE **PROGRAM**

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IJCNN 2023: Celebrating 80 Years of Neural Networks

Neural Networks (NN) have been major techniques for the development of Computational Intelligence (CI) for more than 80 years now, since the conception of the Perceptron in 1943 by Warren McCulloch and Walter Pitts, with the first implementation as a machine built in 1958 by F. Rosenblatt. Now NN have become *the dominant* techniques for CI. The new developments in NN are based on all previous studies and are ubiquitous across all areas of science, technologies and societies. We are seeing new developments of deep neural networks, long short-term memory networks, transformers, neuro-fuzzy systems, neuroevolutionary systems, brain-inspired spiking neural networks, neuromorphic chips, NN based supercomputers and many more.

All the current advancements in the current NN research and technologies are based on the work of pioneers and leaders in this area, such as: F. Rosenblatt, S.Amari, M.Minsky, D. Rumelhart, P.Werbos, B. Widrow, K.Fukushima, T.Kohonen, J.Taylor , S.Grossberg, G.Carpenter, J. Hinton, and many more.

NN research is much inspired by the human brain and the advancements in *neuroinformatics*. And the most prominent NN models have been used back to understand, to cure and to protect the human nervous system. There is a long list of pioneers in neuroinformatics, such as: Hodgkin and Huxley, W.Freeman, M. Arbib, S.Grossberg, J.Hopfield and many more.

NN research was also developed in the direction of *explainability* and here stands out *fuzzy logic* by L.Zadeh (1956), which contributed significantly to a further development of neuro-fuzzy and evolving systems by pioneers such as T. Yamakawa, K.Hirota, J.Mendel, L.Koszy, I.Rudash, B.Kosko, and many more.

We are seeing a fast development of neuromorphic systems and NN-based supercomputers by the leading computer companies, such as IBM, Intel and Microsoft, along with the pioneering work of many scientists and engineers, such as C.Mead, S.Furber, G.Indiveri, and T.Delbruck.

The International Join Conferences on Neural Networks (IJCNN) annual conference series is by far the biggest and the most prestigious forum to report on the new developments in neural networks, neuroinformatics and neuro-technologies. It is co-organised and co-sponsored by the *International Neural Network Society (INNS)* and the *IEEE Computational Intelligence Society*. It has a long history, with the first conference held in 1987, chaired by S.Grossberg.

The IJCNN 2023, held in the beautiful Gold Coast of Australia is one of the largest forums among all IJCNN conferences, with over 1000 papers presented and published in the IEEEE IJCNN Proceedings. We would like to congratulate the participants with their accepted papers and to acknowledge the hard work of the program and organising committees to make this event happen.

Welcome to IJCNN2023!

Brijesh Verma, General Co-Chair
Nikola K. Kasabov, General Co-Chair

Welcome Message from the Organizing Committee of IJCNN 2023

On behalf of the Organizing Committee, we would like to warmly welcome you to the 2023 International Joint Conference on Neural Networks (IJCNN 2023) in Gold Coast, Australia. The IJCNN 2023 is the flagship annual conference of the International Neural Network Society (INNS). The conference is co-organised and co-sponsored by INNS and the IEEE Computational Intelligence Society (IEEE CIS).

IJCNN 2023 has received 1888 papers submitted by 5778 authors from over 63 countries, 89 of which were later withdrawn or final manuscripts were not submitted. Of these, 1034 papers (54.76%) were accepted. The top ten countries with accepted papers in descending order are China, Australia, USA, Japan, India, Germany, Brazil, UK, France, and Italy. The IJCNN 2023 program covers many topics in the areas of neural networks and applications including deep learning architectures, cognitive architectures, brain-inspired architectures, vision and robotics, forecasting, explainable AI, semantic cognition, contrastive learning, reinforcement learning, federated learning, biomedical and cyber security applications. The program consists of 108 in-person oral presentation sessions, 42 virtual oral presentation sessions and 3 poster sessions. The program features 6 keynote speeches, 2 panel discussions, 11 tutorials, 5 workshops, 18 special sessions, and 1 competition.

The conference has registered more than 1000 attendees including some of the top researchers in the field of neural networks from around the world. We are fortunate to have many distinguished keynote speakers such as Prof. Xin Yao, Prof. Barbara Webb, Prof. Marco Gori, Prof. Kenji Doya, Prof. Deliiang Wang, and Prof Nik Kasabov. We would like to take this opportunity to thank the keynote speakers, the organising and program committee members, special session organizers, tutorial organisers, workshop organisers, competition organisers and the reviewers. We would also like to thank our sponsors for their support: INNS, IEEE-CIS, Destination Gold Coast, Tourism and Events Queensland, Business Events Australia, Genisama, and the University of Queensland.

It would have not been possible to organise such a big conference like IJCNN 2023 without the dedicated service of many colleagues. We are especially indebted to the Program Co-Chairs Lipo Wang, Teresa Ludermir and Tom Gedeon and the Technical Co-Chairs: Marley Vellasco, Mengjie Zhang and Chrisina Jayne for their help in managing the review process of over 1800 papers and creating a wonderful program. We would also like to thank the Plenary Co-Chairs: Haibo He, Xin Yao and Cesare Alippi; Special Sessions Co-Chairs: Khan Iftekharuddin and Irena Koprinska; Tutorial Co-Chairs: Michael Blumenstein and Zeng-Guang Hou; Workshop Co-Chairs: Junbin Gao and Carlos Moreno-Garcia; Publication Chair: Stephan Chalup; Award Co-Chairs: Richard Duro, Plamen Angelov and Hussein Abbass; Publicity Co-Chairs: Ponnuthurai Nagaratnam Suganthan, Phoebe Chen and Eyad Elyan; Competition Co-Chairs: Marcus Randall and M. Tanveer; Finance Co-Chairs: Xue Li and Deepthi Kuttichira; Industry Liaison Chair: Yoonsuck Choe; Local Arrangement Co-Chairs: Ranju Mandal, Marcus Randall and Abdul Sattar. We are extremely thankful to all the professional staff: Coral

Miller from Conference Catalysts, Norma Swain and Rhane Samuels from the Gold Coast Convention and Exhibition Centre and Samantha Hills from Destination Gold Coast.

Finally, we would like to thank all authors who worked hard to prepare and submit their high-quality research to IJCNN 2023.

Brijesh Verma, Nikola K. Kasabov - General Co-Chairs
Lipo Wang, Teresa Ludermir, Tom Gedeon - Program Co-Chairs
Marley Vellasco, Mengjie Zhang and Chrisina Jayne - Technical Co-Chairs

Welcome Message from the President of INNS

On behalf of the International Neural Network Society (INNS), it is my utmost pleasure to extend a warm welcome to all of you attending this year's International Joint Conference on Neural Networks (IJCNN) in Gold Coast, Australia. IJCNN 2023 reflects the mission of INNS, a society established in 1987 as the first international, interdisciplinary and inclusive professional organisation focusing on theoretical and computational aspects of brain-inspired learning machines.

This year's IJCNN represents a significant milestone as we are marking the 80th anniversary of the conception of artificial neural networks (McCulloch and Pitts, 1943), a technology which has underpinned and revolutionised numerous fields, from artificial intelligence to healthcare, finance to robotics, through to the ways we communicate and learn, and beyond. Gold Coast, with its vibrant atmosphere and breath-taking natural beauty, provides the perfect backdrop for this extraordinary gathering of neural network researchers and enthusiasts from around the globe.

Throughout the conference, you will have the opportunity to engage with esteemed researchers, industry leaders, and fellow enthusiasts. I encourage you to take full advantage of the diverse range of sessions, workshops, poster presentations, educational and career activities – such as the INNS Town Hall Luncheon or the Explainable AI & Automated Machine Learning (XAI/AML) Section Meeting. I wish for everyone that the conference provides an ideal platform to network, forge collaborations, and form lasting professional relationships that will enrich our academic and professional journey. Please do not forget to enjoy the beautiful Gold Coast, be it in terms of "scientific discourses" with the seagulls (over the rights to fish and chips for dinner) or by absorbing the magic of the sunset at the SkyPoint Observation Desk, ensuring that your time here is as enjoyable as it is intellectually stimulating.

I would like to express my deepest appreciation to the IJCNN 2023 General Chairs (Brijesh Verma and Nikola Kasabov), Program Co-Chairs (Lipo Wang, Teresa Ludermir, and Tom Gedeon), Technical Co-Chairs (Marley Vellasco, Mengjie Zhang, and Chrisina Jayne), our sponsors and team of enthusiastic volunteers, who have dedicated enormous time and effort to make this event possible.

Each year, the International Neural Network Society presents several awards recognizing outstanding contributions in the field of neural networks. I would like to congratulate this year's recipients of the Lifetime Contribution Awards, recognizing:

-Zeng-Guang Hou with the Dennis Gabor Award, for outstanding contributions to engineering applications of neural networks
-Bart Kosko with the Donald O. Hebb Award, for outstanding contributions to research in biological learning
-Daniel Wolpert with the Hermann von Helmholtz Award, for outstanding contributions to research in perception

I wish you all a truly remarkable and memorable experience at the International Joint Conference on Neural Networks in Gold Coast, Australia. Your presence here signifies the dedication and passion for neural networks of all of us, and it is this collective effort and interaction that will shape the future of this field.

“Have a great conference, mate.”

Danilo Mandic
President of the International Neural Network Society

Welcome Message from the President of IEEE-CIS

As the President of the IEEE Computational Intelligence Society (CIS), I very pleased to welcome all the delegates to this important event, the 2023 International Joint Conference on Neural Networks (IJCNN), July 18 - 23, 2023, Gold Coast, Queensland, Australia. The IEEE CIS and the International Neural Networks Society (INNS) have been jointly organizing IJCNN for many years. On odd numbered years, like this year, INNS takes the lead in running the conference, while on even numbered years, IJCNN is organized as a part of the IEEE World Congress on Computational Intelligence (WCCI). The 2024 edition of the IJCNN will be held as a part of WCCI 2024, June 30 – July 5, 2024, in Yokohama, Japan (https://wcci2024.org/).

No one, these days, can doubt the central role of Neural Networks in the AI explosion. Our two societies (INNS and CIS) have led, and continue to lead, research and development in this crucial component of modern machine learning and AI. We are much stronger together than apart. We even have a tradition that the Presidents of the respective societies exchange a “tie of friendship” at the Awards Banquet during the WCCI congress years. (In 2020, it was a “scarf of friendship” as both Presidents were women.) Those who know me won’t be surprised that the tie I gave to Danilo Mandic last year in Padua, Italy was a Hawaiian shirt print tie. The symbolism is there to underscore our mutual commitment to jointly advance this incredibly important field. The 2023 IJCNN program spans the breadth with significant depth of all aspects of neural networks and machine learning from theory to algorithm development to incredible applications addressing some of the big problems facing our planet. This is being done in a hybrid format to accommodate as many participants as possible as we still recover from the pandemic. There are numerous opportunities offered by a great lineup of tutorials, workshops and plenary addresses by pioneers of this field. Speaking of Pioneers, Donald C Wunsch II, who has been a strong contributor to both societies for many years will be presented the IEEE CIS Neural Network Pioneer Award at IJCNN 2023 “For contributions to unsupervised and reinforcement learning”. The Pioneer Awards (Neural Networks, Fuzzy Systems, Evolutionary Computation) are the highest CIS awards. Congratulations, Don!

Please take as many opportunities as possible to network with each other. That’s the real beauty of conference participation. For those new to the field, I invite you to make IJCNN a regular part of your yearly activities. And please consider becoming more deeply involved in both societies in some volunteer roles. You will get back much more than you give.

The creation and organization of this diverse program takes a lot of work. I extend my sincere thanks to the general chairs, every member of the organizing committee, and the program committee, with a special nod to the program chairs. But such a strong technical program cannot have high quality without diligent article referees. So “hats off” to all of you reviewers for your sincere efforts. Of course, the reviewers wouldn’t have any work

to do without all of the authors who are willing to share their research with the broader community. Thank you for supporting IJCNN. Last, but not least, I sincerely express my gratitude to the volunteers of both CIS and INNS, who have worked synergistically to make this event happen. I wish all of you to have an exciting and meaningful conference. Enjoy and enrich yourself in this beautiful setting. I hope to see you at WCCI 2024 in Yokohama.

Jim Keller
President
IEEE Computational Intelligence Society

Message from the Minister for Tourism, Sport and Innovation and Minister Assisting the Premier on Olympics and Paralympics Sport and Engagement

The Hon. Stirling Hinchliffe MP

Welcome to IJCNN 2023, a highlight on the *It's Live in Queensland* events calendar and a wonderful opportunity to showcase the Gold Coast as a tourism destination.

The Queensland community is grateful to welcome visitors who fill their cafes and restaurants, stay in their accommodation, use local transport and explore our unique tourism experiences.

That's why we support events through Tourism and Events Queensland's Business Events Acquisition and Leveraging Fund because they bring a welcomed boost to the local community and supports local jobs.

Events like IJCNN 2023 allows friends and family to reconnect and creates community pride. We hope you enjoy your stay and return again in the near future.

Be sure to immerse yourself in the local culture and get the opportunity to explore some of our world-class tourism experiences in this beautiful region.

Congratulations to the event organisers and volunteers – we wish you all the best for a successful event.

Access the IJCNN 2023 Web App

Scan the QR code to access the web app. View the full schedule, plan your agenda, learn more about the presentations/speakers, and more.
https://ijcnn23.conflux.events/auth/login

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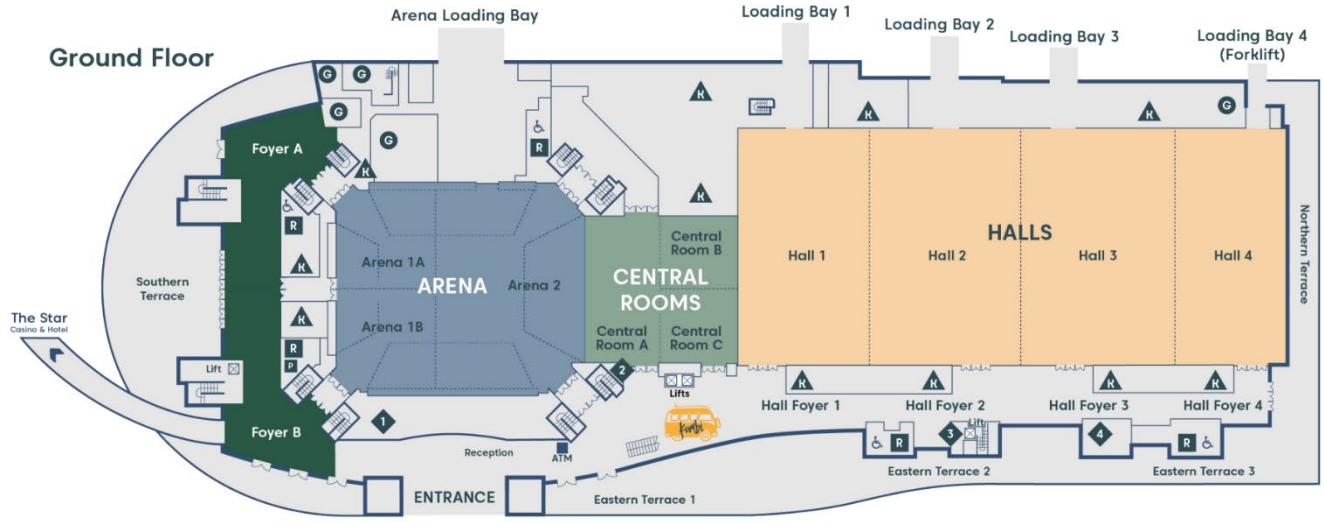
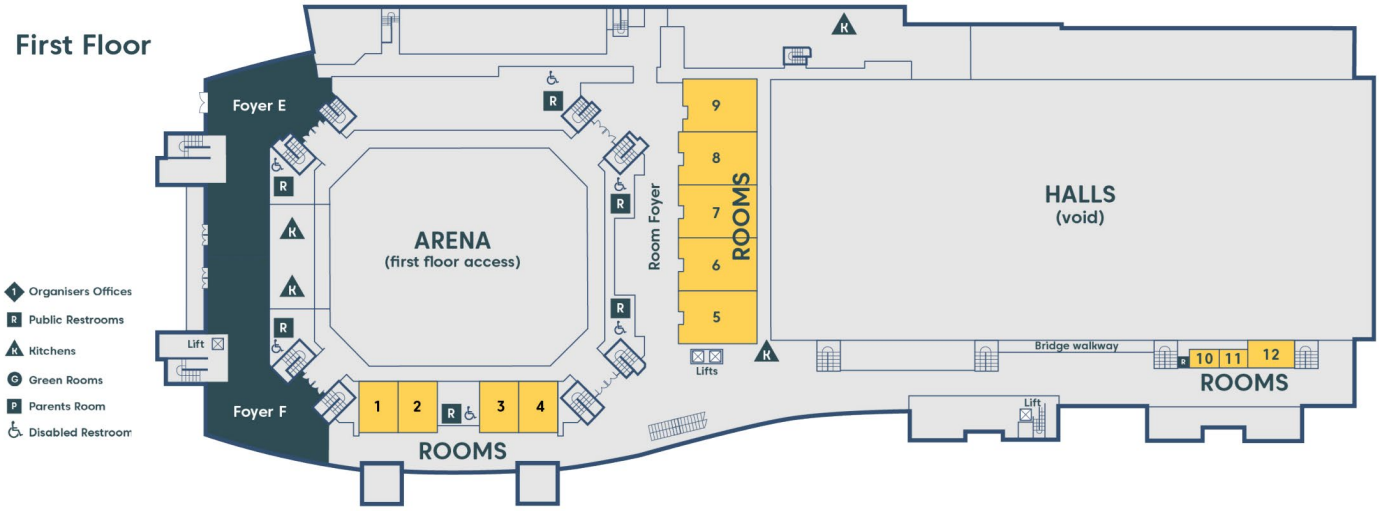
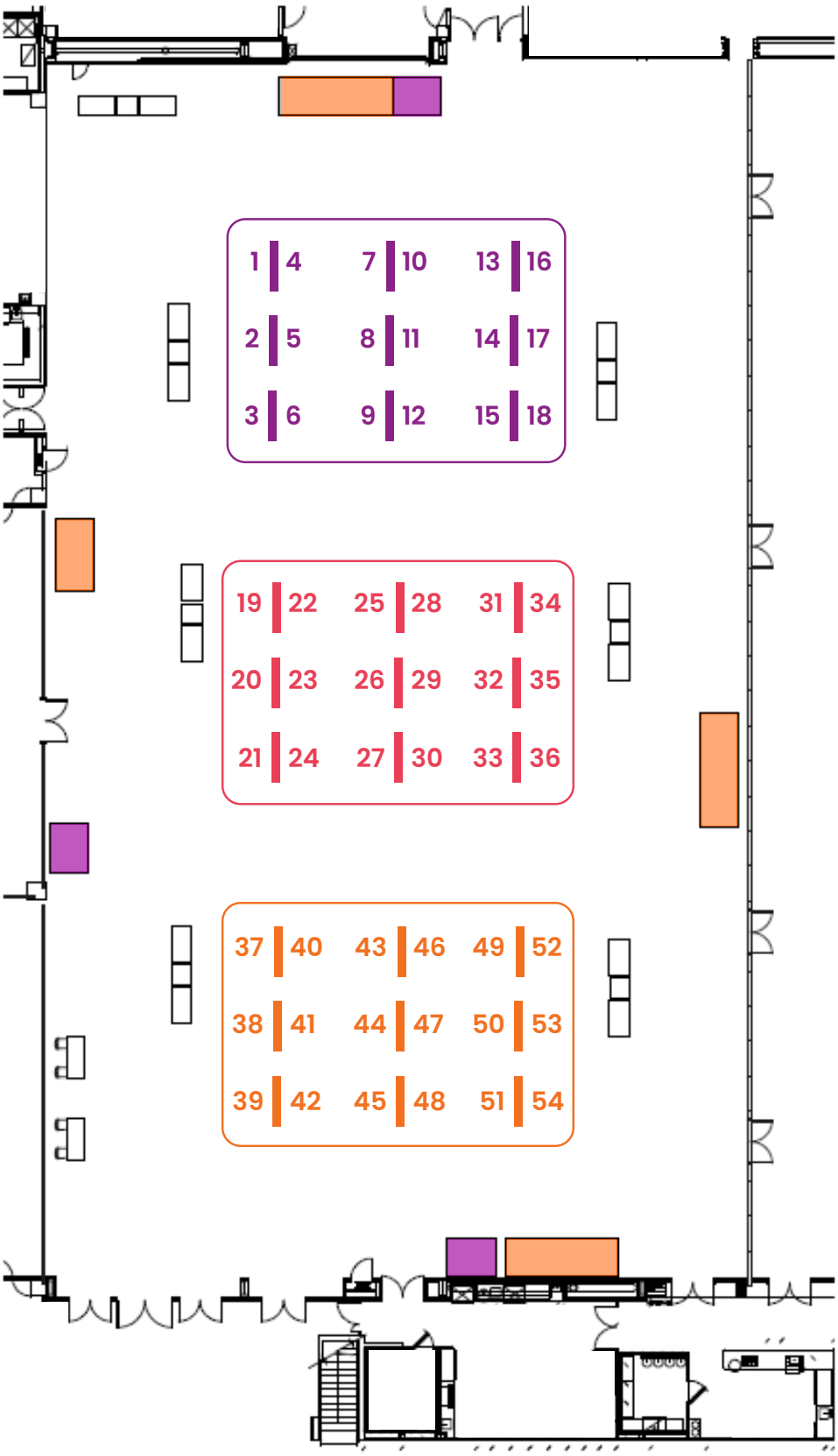
Venue Layout





Poster Layout

International Neural Network Society
IJCNN2023
INTERNATIONAL JOINT CONFERENCE ON NEURAL NETWORKS
18-23 JUNE 2023 | GOLD COAST CONVENTION AND EXHIBITION CENTRE, QUEENSLAND, AUSTRALIA



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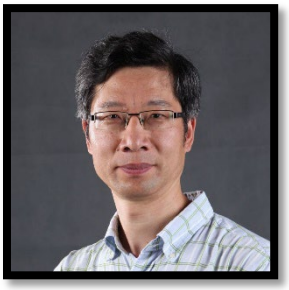

Xin Yao
“Multi-objective Ensemble Learning and Its Applications”
Southern University of Science and Technology

Abstract: Most, if not all, machine learning problems are defined by a single loss function. Yet the vast majority of those loss functions have two or more terms summed together through hyper-parameters. A closer examination of those loss functions reveals that there are in essence two or more conflicting objectives that a loss function tries to minimise, e.g., accuracy and regularisation. This talk formulates machine learning as a multi-objective problem, instead of trying to combine different objectives into a single loss function through a weighted sum. While the weighted sum approach is simpler, it does require additional time and effort to tune hyper-parameters (weights). This talk starts with ensemble learning. Then it describes a simple idea of multi-objective learning and its natural fit to ensembles. Existing multi-objective evolutionary algorithms can be used as multi-objective learning algorithms without requiring the objective functions to be differentiable or even continuous. Selected examples of multi-objective learning in class imbalance learning, software effort estimation and fair machine learning will be presented to illustrate the flexibility and generality of multi-objective learning. It is argued that multi-objective learning can be an effective approach towards achieving different trade-off in various practical learning scenarios.

Barbara Webb
“Modelling The Neural Mechanisms of Navigation In Insects”
University of Edinburgh

Abstract: Insect navigation has been a focus of behavioural study for many years, and provides a striking example of cognitive complexity in a miniature brain. We have used computational modelling to bridge the gap from behaviour to neural mechansims by relating the computational requirements of navigational tasks to the type of computation offered by invertebrate brain circuits.

We have shown that visual memory of multiple views could be acquired by associative learning in the mushroom body neuropil, and allow insects to recapitulate long routes. We have also proposed a circuit in the central complex neuropil that integrates sky compass and optic flow information on an outbound path and can thus steer the animal directly home; moreover this circuit can be used for additional vector calculations such as finding novel shortcuts. The models are strongly constrained by neuroanatomy, and are tested in realistic agent and robot simulations.

Marco Gori
“Learning With No Data Collections”
University of Siena

Abstract: By and large, the spectacular results of machine learning rely on the appropriate organization of huge data collections, which has strongly pushed the development of top level solutions by big companies. I this talk we propose an orthogonal research direction where we expect that perceptual cognitive skills (e.g. in language, vision, and control) can emerge simply by of environmental interactions without needing to store and properly organize big data collections. The proposed approach relies on moving the framework of statistical machine learning to that of learning over time by solving optimization problems similar to those that are at the basis of laws in Physics. We show that any classic learning process arises from the forward solution of classic variational problems and provide preliminary experimental evidence of the effectiveness of the theory.

DeLiang Wang
“Neural Spectrospatial Filter: On Beamforming in the Deep Learning Era”
Ohio State University

Abstract: As the most widely-used spatial filtering approach for multi-channel signal separation, beamforming extracts the target signal arriving from a specific direction. We present an emerging approach based on multi-channel complex spectral mapping, which trains a deep neural network (DNN) to directly estimate the real and imaginary spectrograms of the target signal from those of the multi-channel noisy mixture. In this all-neural approach, the trained DNN itself becomes a nonlinear, time-varying spectrospatial filter. How does this conceptually simple approach perform relative to commonly-used beamforming techniques on different array configurations and in different acoustic environments? We examine this issue systematically on speech dereverberation, speech enhancement, and speaker separation tasks. Comprehensive evaluations show that multi-channel complex spectral mapping achieves speech separation performance comparable to or better than beamforming for different array geometries, and reduces to monaural complex spectral mapping in single-channel conditions, demonstrating the versatility of this new approach for multi-channel and single-channel speech separation. In addition, such an approach is computationally more efficient than popular mask-based beamforming. We conclude that this neural spectrospatial filter is capable of superseding traditional and mask-based beamforming.

Kenji Doya
"Bayesian inference, reinforcement learning, and the cortico-basal ganglia circuit"
Okinawa Institute of Science and Technology

Abstract: Bayesian inference is a standard way of handling uncertainties in sensory perception and reinforcement learning is a common way of acting in unknown environments. While they are used in combination for perception and action in uncertain environments, the similarity of their computations has been formulated as the duality of inference and control, or control as inference. In this talk, I will review these theoretical frameworks and discuss their implications in understanding the common circuit architectures of the sensory and motor cortices, and possible roles of the basal ganglia in motor and sensory processing.

Nikola K Kasabov
"Neuroinformatics, Neural networks and Neurocomputers for Brain-inspired AI: Challenges and Opportunities"
Auckland University of Technology

Abstract: The talk discusses briefly current challenges in AI, including: efficient learning of data (interactive, adaptive, life-long; transfer); interpretability and explainability; personalised predictive modelling and profiling; multiple modality of data (e.g. genetic, clinical, behaviour, cognitive, static, temporal, longitudinal); computational complexity; energy consumption; human-machine interaction.

Opportunities to address these challenges are presented through advancement in Neuroinformatics, Neural networks and Neurocomputers (the 3N). Neuroinformatics offer a tremendous amount of data and knowledge about how the human brain and the nervous system work. Many brain information processing principles can be now implemented in novel Neural network computational models, such as: sparseness of computation, leading to a much less computational complexity and a significant energy consumption; diversity in the NN architecture in terms of type of neurons and compartmentalisation of computations, which can improve results; cognitive computation, where bottom-up sensory information and top-down prior knowledge are used to speeds-up the learning process; life-long and transfer learning; interactive and reinforcement learning (rather than batch-mode); self-organisation (rather than pre-defined number of layers and neurons); evolving spatio-temporal knowledge and many more. Some of these principles have already been used in neural network models, such as SOM (Kohonen), ART (Grossberg), ECOS ([1,2]), spiking neural networks (SNN) (Maass), [3]. The latter ones have inspired the development of neuromorphic hardware chips and Neurocomputers, characterised by much low power consumption, massive parallelism and fast processing.

Panels

Explainable AI Panel
Date: Tuesday, June 20
Room: Arena 1B
Panel Chair: Asim Roy
Panelists: Steve Grossberg, Paulo Lisboa, Janet Wiles, and Marley Vellasco
Abstract: This panel discussion will offer a few different perspectives on Explainable AI. There will be time for Q&A after these short presentations. Titles for the short presentations and corresponding references are provided below.

-"Adaptive Resonance Theory is Explainable: Deep Learning, and AI based on it, is not."
-"Given tabular data, ANOVA can express any black box classifier as a sum of non-linear and non-overlapping functions of fewer variables. The derived models make plausible predictions for real-world data and buck the performance-transparency trade-off even against deep learning."
- "Who is XAI explaining itself to? Insights from Developer Priorities and User Experiences."
-"Explainable AI: Challenges and Opportunities"
-"DARPA's form of Explainability provides natural protection from adversarial attacks plus a symbolic model."

Impacts of the NSF CAREER Award Panel
Date: Thursday, June 22
Room: Arena 1B
Panel Chair: Anthony Kuh
Panelists: Gregory Ditzler, Haibo He, G. Kumar Venayagamoorthy, Donald Wunsch, and Hao Xu
Abstract: There are currently many good career opportunities for data science and machine learning researchers in industry ranging from large IT and AI companies to startup firms. This panel showcases successful academic careers. The panel features five panelists that are former NSF Career Award winners from the International Neural Network Society (INNS) and the IEEE Computational Intelligence Society (CIS) that received their NSF CAREER awards from the Engineering (ENG) directorate / Electrical, Communications and Cyber Systems (ECCS) Division / Energy, Power, Control and Networks (EPCN) program. Each panelist will briefly discuss their NSF CAREER Award and how it helped them launch their academic careers. This will be followed by a Q&A session. This should be of great interest to all participants, but especially to junior faculty, postdocs, and graduate students.

Competition

Competition on Reproducibility and Loss Landscape Mapping in Feed-forward Neural Networks

Date: Tuesday, June 20
Room: Arena 1B
Organizer: Marcus Gallagher
Abstract: Feed-forward neural networks (aka multilayer perceptrons) have been widely applied to supervised learning problems since the mid-1980s. Over this time, thousands of different datasets have been used in thousands of different experimental studies, with results reported in the literature. This research has helped to fuel tremendous progress in the field. However, documented reproduction of published experimental results has never been attempted in many cases. The availability of computational resources, software libraries and datasets creates the opportunity to attempt to reproduce and even expand on experiments that previously took a large amount of time. In addition, it is possible to run experiments not just to try and locate single best minimizer of the training loss function, but to collect and explore numerous convergence points on a loss landscape, to better understand the properties of problem instances (e.g. in relation to multimodal optimization and exploratory-driven techniques such as quality-diversity search).

The goal of this competition is to challenge researchers to: (a) attempt to reproduce an existing experimental study and report on their findings (including successes, failures and lessons learned); and/or (b) carry out an experimental study on the loss landscape of a neural network training problem instance to reveal new insights (including finding multiple high-quality solutions and points of attraction for different training algorithms).

https://marcusgal.github.io/reproduce_nnexpt_ijcnn2023.html

Tutorials

All Tutorials will take place on Sunday, June 18

Tutorial: Explainable AI (XAI) for Computer Vision – A Review of Existing Methods and a New Method to Extract a Symbolic Model from a CNN model
Organizer(s): Asim Roy
Time: 8:00 – 10:00
Room: Hall 3

Tutorial: Ethical Risks and Challenges of Computational Intelligence
Organizer(s): Jim Torresen, Xin Yao
Time: 8:00 – 10:00
Room: Hall 4

Tutorial: Randomization in Neural Networks: Feed-forward and Reservoir Computing models
Organizer(s): P. N. Suganthan, Claudio Gallicchio
Time: 8:00 – 10:00
Room: Room 10-12

Tutorial: Foundation Models: A Sweeping Opportunity for Computer Vision
Organizer(s): Qiming Zhang, Yufei Xu, Jing Zhang, Dacheng Tao
Time: 10:30 – 12:30
Room: Hall 4

Tutorial: Machine Learning Pipeline for EEG-based Brain-computer Interfaces
Organizer(s): Siyang Li, Dongrui Wu
Time: 10:30 – 12:30
Room: Room 10-12

Tutorial: Language and the Brain: Deep Learning for Brain Encoding and Decoding
Organizer(s): Subba Reddy Oota, Manish Gupta, Bapi Raju Surampudi
Time: 13:30 – 15:30
Room: Hall 3

Tutorial: Collaborative Learning and Optimisation
Organizer(s): Kai Qin
Time: 13:30 – 15:30
Room: Hall 4

Tutorial: Graph Self-Supervised Learning: Taxonomy, Frontiers, and Applications
Organizer(s): Yixin Liu, Yizhen Zheng, Ming Jin, Feng Xia, Shirui Pan
Time: 13:30 – 15:30
Room: Room 10-12

Tutorial: Recent Advancement on Federated Learning Combating Non-IID Data
Organizer(s): Guodong Long, Yue Tan
Time: 16:00 – 18:00
Room: Hall 3

Tutorial: Trustworthy Federated Learning: Concepts, Methods, Applications, and Beyond
Organizer(s): Zenglin Xu, Dun Zeng, Jinglong Luo, Xinyu Fu, Yifei Zhang, Irwin King
Time: 16:00 – 18:00
Room: Hall 4

Tutorial: Explaining Machine Learning Decisions
Organizer(s): Naveen Kumar, Ankit Rajpal, Sheetal Rajpal, Kountay Dwivedi
Time: 16:00 – 18:00
Room: Room 10-12

Workshops

All Workshops will take place on Friday, June 23

Workshop: Multimodal Synthetic Data for Deep Neural Networks (MSynD)
Organizer(s): Moshiur Farazi, Olivier Salvado, Zeeshan Hayder, Mohammad Ali Armin, Xun Li, Ali Cheraghian
Time: 8:00 – 12:30
Room: Room 1
Abstract: The use of synthetic data in training and evaluating deep neural networks has become increasingly popular in recent years, due to its ability to provide large amounts of diverse and customizable data for training and testing. Traditional training data are mostly collected from real world scenarios which make them expensive, time-consuming to acquire, and often require expert knowledge for annotation. Synthetic data on the other hand is artificially generated and has the advantage of being easily controllable and scalable, making it possible to generate large amounts of data for a wide range of tasks, without compromising the privacy of individuals or commercial interests. In addition to this, synthetic data provide a unified labelling framework that can be exploited for multi-task learning. However, many current approaches to synthetic data generation and application focus on single modalities, such as audio, video, text, and sensor data, and do not adequately capture the multimodal nature of many real-world data sets. In this workshop, we propose to explore the challenges and opportunities of using synthetic data in multimodal deep learning applications. We are aiming to bring together researchers and practitioners from a variety of academic and industrial disciplines to discuss the recent advances in multimodal synthetic data generation, and to showcase successful examples of their usage in deep neural network applications. Attendees will have the opportunity to learn about the latest techniques and tools for generating and using synthetic data, and to apply these techniques to their own research problems. This workshop is intended for researchers and practitioners working in the fields of deep learning and artificial intelligence.

Workshop: Workshop on Trustworthy and Responsible AI: theory, applications, and challenges
Organizer(s): Qinghua Lu, Dong Yuan, Xuyun Zhang, Feng Liu, Minhui Xue, Miao Xu, Yanjun Zhang, Huaming Chen
Time: 8:00 – 12:30
Room: Room 2
Abstract: Emerging as a pivotal technique supporting a wide range of societal activities, such as autonomous transportation and health care, a trustworthy and responsible machine learning system (TRMLS) has become a focus for worldwide researchers. One main goal is to investigate the different principles and constraints for TRMLS to be applied in practice by a broad spectrum of researchers and practitioners. This workshop will focus on discussing the theories, principles, and experiences of developing trustworthy and responsible machine learning systems. This workshop will be the first attempt of gathering researchers interested in the emerging and interdisciplinary filed of trustworthy and responsible machine learning from a wide range of disciplines. This workshop will highlight the recent related works and foster unprecedented chance to bridge the research gaps across the topics of machine learning, security, fairness, privacy and so on. This workshop will conduct a reflection on foundations (theory and application) of trustworthy machine learning and lay out a positive vision for future collaboration and research activities.

Workshop: Autonomous Learning in Complex Decision Situations
Organizer(s): Luis Martínez, Ivor W Tsang, Jie Lu, Feng Liu, Jun Wang, Xin Yao
Time: 8:00 – 12:30
Room: Room 3
Abstract: The aim of the workshop is to create an integrated and holistic computational foundation for a new research direction – autonomous learning in complex decision situations. We define a decision situation as complex if the data available for use in machine learning efforts is massive and/or uncertain and/or dynamic. Autonomous learning will advance the capability of machines to learn from complex situations and minimise human involvement in the learning process (such as to autonomously determine a threshold, a sample set, a source domain, a concept drift, and a policy). Recently we have seen several new successful developments in the direction, such as massive stream learning algorithms, incremental and online learning for streaming data. These developments have demonstrated how the autonomous learning can be used in some complex decision situations to contribute to the implementation of machine learning capability. We have also witnessed some compelling evidence of successful investigations on the use of the autonomous learning methodology to support real-time prediction and decision making in practice. With these observations, it is instructive, vital, and timely to offer a unified view of the current trends and form a broad forum for the fundamental and applied research as well as the practical development of autonomous learning in complex decision situations for improving machine learning and data-driven decision support systems.

Workshop: Machine Learning, Artificial Intelligence and Neural Networks in Higher Education Workshop
Organizer(s): Chrisina Jayne, Danilo Mandic, Carlos Moreno-Garcia, Eyad Elyan
Time: 13:30 – 18:00
Room: Room 1
Abstract: This workshop aims to explore applications of Machine Learning, Artificial Intelligence (AI) and Neural Networks in Higher Education (HE). It will include presentations/talks related to areas such as AI technologies utilised to support teaching and learning, intelligent tutors, personalised learning, administrations of educational systems, educational research, augmented and virtual reality.

Workshop: Interactive Explanations of Neural Networks and Artificial Intelligence (Int-XAI)
Organizer(s): Nirmalie Wiratunga, John Isaacs, Kyle Martin, Anjana Wijekoon
Time: 13:30 – 18:00
Room: Room 3
Abstract: Deep learning architectures have become synonymous with state-of-the-art performance across a broad spectrum of domains. In everything from natural language processing and generation for conversation, to machine vision for clinical decision support, intelligent systems are supporting both the personal and professional spheres of our society. Explaining the outcomes and decision-making of these systems remains a challenge. As the prevalence of AI grows in our society, so too does the complexity and expectation surrounding the ability of autonomous models to explain their actions.

Workshop: Special INNS Workshop: International Neural Network Society Workshop on Deep Learning Innovations and Applications
Organizer(s): Chrisina Jayne, Danilo Mandic, Richard Duro
Room: Virtual
Abstract: This special INNS sponsored workshop aims to explore innovations and applications of deep Learning and bring together academic researchers and industry professionals. Authors will be invited to submit a paper in the first edition of the INNS workshop series in Procedia Computer Science, https://www.sciencedirect.com/journal/procedia-computer-science which is open access.

Topics for the workshop include

- Deep Learning Applications in the areas such as healthcare, finance, education, visual recognition, entertainment, personalisation, fraud detection, autonomous driving, bioinformatics and others
- Graph Neural Networks
- Reinforcement learning
- Generative Neural Networks
- Deep Neural Networks for computer vision
- Deep Neural Networks for natural language processing
- Deep learning and ethics
- Explainability and emerging issues

The workshop will be entirely online with links to the presentations and abstracts of the accepted papers.

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PROGRAM AT A GLANCE

	SUNDAY, JUNE 18		
08:00	**Tutorial: Explainable AI XAI for Computer Vision – A Review of Existing Methods and a New Method to Extract a Symbolic Model from a CNN model** Hall 3	**Tutorial: Ethical Risks and Challenges of Computational Intelligence** Hall 4	**Tutorial: Randomization in Neural Networks: Feed-forward and Reservoir Computing models** Rooms 10-12
10:00	**Coffee Break** Hall 1		
10:30	**Paper Development Workshop** Hall 3	**Tutorial: Foundation Models: A Sweeping Opportunity for Computer Vision** Hall 4	**Tutorial: Machine Learning Pipeline for EEG-based Brain- computer Interfaces** Rooms 10-12
12:30		**Lunch On Your Own**	
13:30	**Tutorial: Language and the Brain: Deep Learning for Brain Encoding and Decoding** Hall 3	**Tutorial: Collaborative Learning and Optimisation** Hall 4	**Tutorial: Graph Self-Supervised Learning: Taxonomy, Frontiers, and Applications** Rooms 10-12
15:30	**Coffee Break** Hall 1		
16:00	**Tutorial: Recent Advancement on Federated Learning Combating Non-IID Data** Hall 3	**Tutorial: Trustworthy Federated Learning: Concepts, Methods, Applications, and Beyond** Hall 4	**Tutorial: Explaining Machine Learning Decisions** Rooms 10-12
18:00	**Break**		
18:30	**Welcome Reception** Hall 1		

MONDAY, JUNE 19

08:30	**Plenary | Xin Yao** Arena 1B												
09:30	**Coffee Break** Hall 1												
10:00	**Deep Learning Architecture: Part 1** Arena 1B	**Neural Networks in Finance** Arena 1A	**Hybrid Learning Methods** Foyer E	**Knowledge Graphs** Central Room B	**Novel Feed-forward Neural Networks** Central Room C	**Neural Networks in Physics and Mathematics** Room 5	**Generative Adversarial Networks** Room 6	**Special Session: Machine Learning and Deep Learning Methods applied to Vision and Robotics MLDLMVR: Part 1** Room 7	**Special Session: Advanced artificial intelligence techniques for medical decision-making: challenges and opportunities** Room 8	**Virtual: Feature Selection, Extraction, and Aggregation**	**Virtual: Neural Networks for Image and Video Enhancement**	**Virtual: Text Summarisation and Classification**	**Virtual: Dialogue Systems and knowledge Discovery**
12:00			**Town Hall Luncheon** must be registered Arena 2					**Lunch On Your Own**					
13:00	**Event Extraction Using Neural Networks** Arena 1B	**Forecasting Using Neural Networks: Part 1** Arena 1A	**Neural Networks for Image Classification: Part 1** Foyer E	**Cognitive Architectures** Central Room B	**Probabilistic and Information-Theoretic Methods** Central Room C	**Brain-Inspired Architectures** Room 5	**Special Session: Machine Learning and Deep Learning Methods applied to Vision and Robotics MLDLMVR: Part 2** Room 6	**Neural Network Hardware** Room 7	**Image Super-Resolution and Generation** Room 8	**Virtual: Deep Learning Architecture: Part 2**	**Virtual: Biomedical Applications of Neural Networks: Part 1**	**Virtual: Medical Image Processing Using Neural Networks**	**Virtual: Neural Networks for Object Detection: Part 1**
15:00	**Coffee Break** Hall 1												
15:30	**Plenary | Barbara Webb** Arena 1B												
16:30	**Deep Learning Theory: Part 1** Arena 1B	**Forecasting Using Neural Networks: Part 2** Arena 1A	**Neural Networks for Image Classification: Part 2** Foyer E	**Sentiment Analysis Using Neural Networks** Central Room B	**Neural Networks in Robotics** Central Room C	**Semantic Cognition and Language** Room 5	**Graph Matching with Neural Networks** Room 6	**Special Session: Machine Learning and Deep Learning Methods applied to Vision and Robotics MLDLMVR: Part 3** Room 7	**Special Session: Deep Edge Intelligence** Room 8	**Virtual: Recommender Systems with Neural Networks: Part 1**	**Virtual: Classifiers: Part 1**	**Virtual: Neural Networks for Fault and Fraud Detection**	**Virtual: Event Extraction and Action Recognition**
18:30	**Mentor-Mentee Networking Event, Monday** Room 5						**Poster Session** Hall 1						

	Tuesday, June 20												
08:30	**Explainable AI Panel** Arena 1B												
09:30	**Coffee Break** Hall 1												
10:00	**Deep Learning Algorithms: Part 1** Arena 1B	**Medical Image Recognition Using Neural Networks: Part 1** Arena 1A	**Bioinformatics and Drug Discovery** Foyer E	**Neural Networks for Cyber Security: Part 1** Central Room B	**Contrastive Learning** Central Room C	**Medical Data Processing with Neural Networks** Room 5	**Unsupervised Learning and Clustering: Part 1** Room 6	**Special Session: Neuromorphic Computing for Cloud, Edge and IoT** Room 7	**Special Session: Deep Learning for Anomaly Detection: Theory, Algorithms, and Applications** Room 8	**Virtual: Vision and Robotics with Neural Networks**	**Virtual: Natural Language Processing Using Neural Networks**	**Virtual: Recommender Systems with Neural Networks: Part 2**	**Virtual: Forecasting and Prediction**
12:00	**Lunch On Your Own**												
13:00	**Relation Extraction and Knowledge Distillation with Neural Networks** Arena 1B	**Large-Scale Neural Networks** Arena 1A	**Object and Defect Detection Using Neural Networks: Part 1** Foyer E	**Neural Networks for Cyber Security: Part 2** Central Room B	**Graph Neural Networks** Central Room C	**Neural Networks for Video Processing: Part 1** Room 5	**Unsupervised Learning and Clustering: Part 2** Room 6	**Special Session: Recommender Systems, Digital Marketing and Consumer Behaviour Prediction** Room 7	**Deep Learning for Anomaly Detection** Room 8	**Virtual: Deep Learning Algorithms: Part 2**	**Virtual: Classifiers: Part 2**	**Virtual: Image Super-Resolution and Dehazing**	**Virtual: Sentiment and Emotion**
15:00	**Coffee Break** Hall 1												
15:30	**Plenary | Marco Gori** Arena 1B												
16:30	**Feature Extraction: Part 1** Arena 1B	**Medical Image Recognition Using Neural Networks: Part 2** Arena 1A	**Neural Network Models: Part 1** Foyer E	**Image Segmentation with Neural Networks** Central Room B	**Machine Learning Algorithms** Central Room C	**Neural Networks for Video Processing: Part 2** Room 5	**Neural Networks for Data Classification: Part 1** Room 6	**Special Session: Reservoir Computing: theory, models, and applications** Room 7	**Special Session: Domain Adaptation for Complex Situations: Theories, Algorithms and Applications** Room 8	**Virtual: Object and Defect Detection Using Neural Networks: Part 2**	**Virtual: Reinforcement Learning: Part 1**	**Virtual: Neural Network Applications in Security**	**Virtual: Biomedical Applications of Neural Networks: Part 2**
18:30	**Poster Session** Hall 1						**Competitions** Area 1B						
19:30	**XAI / AML Section Meeting** Room 9												

Wednesday, June 21

08:30	**Plenary | Nikola K. Kasabov** Arena 1B												
09:30	**Coffee Break** Hall 1												
10:00	**Federated Learning** Arena 1B	**Health Risk Prediction and Medical Records** Arena 1A	**Smart Energy Network with Machine Learning** Foyer E	**Multi-Agent Reinforcement Learning: Part 1** Central Room B	**Text Understanding and Analysis Using Neural Networks: Part 1** Central Room C	**Neural Networks for Computer Vision: Part 1** Room 5	**Neural Networks for Image Recognition** Room 6	**Special Session: The Coming of Age of Explainable AI XAI and Machine Learning** Room 7	**Special Session: Deep Learning for Graphs DL4G: Part 1** Room 8	**Virtual: Neural Network Applications: Part 1**	**Virtual: Neural Network Models: Part 2**	**Virtual: Neural Networks for Video Processing: Part 3**	**Virtual: Transformers: Theory and Applications**
12:00	**Lunch On Your Own**												
13:00	**Emotion Recognition with Neural Networks** Arena 1B	**Meta-Learning and Ensembles** Arena 1A	**Time-Series Analysis Using Neural Networks** Foyer E	**Multi-Agent Reinforcement Learning: Part 2** Central Room B	**Text Understanding and Analysis Using Neural Networks: Part 2** Central Room C	**Neural Networks for Computer Vision: Part 2** Room 5	**Neural Network Applications in Image and Data Processing** Room 6	**Neural Networks in Law and Tracking** Room 7	**Special Session: Deep Learning for Graphs DL4G: Part 2** Room 8	**Virtual: Neural Network Training Strategies: Part 1**	**Virtual: Neural Networks for Security and Law**	**Virtual: Reinforcement Learning: Part 2**	**Virtual: Feature Extraction: Part 2**
15:00	**Coffee Break** Hall 1												
15:30	**Plenary | Kenji Doya** Arena 1B												
16:30	**Domain Adaptation** Arena 1B	**Image Enhancement and Denoising with Neural Networks** Arena 1A	**Neural Networks for Prediction** Foyer E	**Image Re-Identification and Retrieval** Central Room B	**Transfer Learning and Optimization** Central Room C	**Recurrent neural networks and Models of Neurons** Room 5	**Neural Networks for Data Classification: Part 2** Room 6	**Rumor Detection and Fault Diagnosis** Room 7	**Special Session: Federated Learning - Methods, Applications, Challenges, and beyond** Room 8	**Virtual: Neural Network Training Strategies: Part 2**	**Virtual: Image Processing with Neural Networks: Part 1**	**Virtual: Language Models and Cognitive Architectures**	**Virtual: Prediction and Control**
18:30	**Poster Session** Hall 1												
19:30	**Banquet and Award Ceremony** Arena 2												

	Thursday, June 22												
08:30	**Plenary | Deliang Wang** Arena 1B												
09:30	**Coffee Break** Hall 1												
10:00	**Neural Networks for Object Detection: Part 2** Arena 1B	**Special Session: Randomization-Based Deep and Shallow Learning Algorithms and/or Biomedical Applications** Arena 1A	**Question and Answer Systems: Part 1** Foyer E	**Reinforcement Learning Algorithms: Part 1** Central Room B	**Text Summarisation with Neural Networks** Central Room C	**Transformers: Part 1** Room 5	**Neural Networks for Semantics: Part 1** Room 6	**Neural Networks for Software Development** Room 7	**Special Session: Intelligent Vehicles and Transportation Systems IVTS** Room 8	**Virtual: Shape and Image Recognition**	**Virtual: Deep Learning Theory: Part 2**	**Virtual: Neural Networks for Pattern Recognition**	**Virtual: Neural Network Applications: Part 2**
12:00	**Lunch On Your Own**												
13:00	**Image Generation and Analysis** Arena 1B	**Neural Networks for Recommendations: Part 1** Arena 1A	**Question-and-Answer Systems: Part 2** Foyer E	**Reinforcement Learning Algorithms: Part 2** Central Room B	**Text Classification with Neural Networks: Part 1** Central Room C	**Transformers: Part 2** Room 5	**Neural Networks for Semantics: Part 2** Room 6	**Training Techniques for Deep Neural Networks: Part 1** Room 7	**Special Session: Lifelong Learning: recent advances and challenges** Room 8	**Virtual: Image Processing with Neural Networks: Part 2**	**Virtual: Robustness of Deep Neural Networks**		
15:00	**Coffee Break** Hall 1												
15:30	**Impacts of the NSF CAREER Award Panel** Arena 1B												
16:30	**Anomaly Detection Using Neural Networks** Arena 1B	**Neural Networks for Recommendations: Part 2** Arena 1A	**Explainable AI** Foyer E	**Spiking Neural Networks** Central Room B	**Text Classification with Neural Networks: Part 2** Central Room C	**Neural Networks for Communications** Room 5	**Reservoir Networks and Multi-Objective Learning** Room 6	**Training Techniques for Deep Neural Networks: Part 2** Room 7	**Special Session: Social Network Computation for Online Intelligence** Room 8				

PROGRAM AT A GLANCE

	FRIDAY, JUNE 23		
08:00	**Workshop: Multimodal Synthetic Data for Deep Neural Networks (MSynD)** Room 1	**Workshop: Workshop on Trustworthy and Responsible AI: theory, applications, and challenges** Room 2	**Workshop: Autonomous Learning in Complex Decision Situations** Room 3
10:00	**Coffee Break** Gallery		
10:30	**Workshop: Multimodal Synthetic Data for Deep Neural Networks (MSynD) Continued** Room 1	**Workshop: Workshop on Trustworthy and Responsible AI: theory, applications, and challenges Continued** Room 2	**Workshop: Autonomous Learning in Complex Decision Situations Continued** Room 3
12:30	**Lunch on Your Own**		
13:30	**Workshop: Machine Learning, Artificial Intelligence and Neural Networks in Higher Education Workshop** Room 1		**Workshop: Interactive Explanations of Neural Networks and Artificial Intelligence (Int- XAI)** Room 3
15:30	**Coffee Break** Gallery		
16:00	**Workshop: Machine Learning, Artificial Intelligence and Neural Networks in Higher Education Workshop Continued** Room 1		**Workshop: Interactive Explanations of Neural Networks and Artificial Intelligence (Int- XAI) Continued** Room 3
18:00	**End of Conference**		

Monday, June 19, 2023

8:30 - 9:30
Plenary: Xin Yao
Room: Arena 1B
Session Chairs: Marcus Gallagher and Yoonsuck Choe

Multi-objective Ensemble Learning and Its Applications
Xin Yao
Southern University of Science and Technology
Most, if not all, machine learning problems are defined by a single loss function. Yet the vast majority of those loss functions have two or more terms summed together through hyper-parameters. A closer examination of those loss functions reveals that there are in essence two or more conflicting objectives that a loss function tries to minimise, e.g., accuracy and regularisation. This talk formulates machine learning as a multi-objective problem, instead of trying to combine different objectives into a single loss function through a weighted sum. While the weighted sum approach is simpler, it does require additional time and effort to tune hyper-parameters (weights). This talk starts with ensemble learning. Then it describes a simple idea of multi-objective learning and its natural fit to ensembles. Existing multi-objective evolutionary algorithms can be used as multi-objective learning algorithms without requiring the objective functions to be differentiable or even continuous. Selected examples of multi-objective learning in class imbalance learning, software effort estimation and fair machine learning will be presented to illustrate the flexibility and generality of multi-objective learning. It is argued that multi-objective learning can be an effective approach towards achieving different trade-off in various practical learning scenarios.

9:30 – 10:00
Coffee Break
Room: Hall 1

10:00 – 12:00
Deep Learning Architecture: Part 1
Day1_AM_Rm1
Room: Arena 1B
Session Chairs: Christoph Linse

10:00 ***Sparse Gate for Differentiable Architecture Search***
Liang Fan and Handing Wang (Xidian University, China)

10:20 ***Neural Network Module Decomposition and Recomposition with Superimposed Masks***
Hiroaki Kingetsu (Fujitsu Laboratories Ltd., Japan); Kenichi Kobayashi (Fujitsu Limited, Japan); Taiji Suzuki (University of Tokyo, Japan)

10:40 ***Sparsely-Gated Mixture-Of-Expert Layers for CNN Interpretability***
Svetlana Pavlitska (FZI Research Center for Information Technology & Karlsruhe Institute of Technology, Germany); Christian Hubschneider (FZI Research Center for Information Technology, Germany); Lukas Struppek (Technische Universität Darmstadt, Germany); J. Marius Zöllner (FZI Research Center for Information Technology, Germany)

11:00 ***FiNAS: Filtering for Accelerating Neural Architecture Search Based on Bayesian Optimization***
Yuwen Deng, Wang Kang and Wei Xing (Beihang University, China)

11:20 ***Cross Range Quantization for Network Compression***
Yicai Yang, Xiaofen Xing, Ming Chen, Kailing Guo and Xiangmin Xu (South China University of Technology, China); Fang Liu (Guangdong University of Finance, China)

11:40 ***Convolutional Neural Networks Do Work with Pre-Defined Filters***
Christoph Linse (University of Lübeck, Germany); Erhardt Barth (University of Luebeck, Germany); Thomas Martinetz (Universität zu Lübeck, Germany)

10:00 – 12:00
Neural Networks in Finance
Day1_AM_Rm2
Room: Arena 1A
Session Chairs: Karthikeswaren Ramachandran

10:00 ***Dynamic Portfolio Optimization via Augmented DDPG with Quantum Price Levels-Based Trading Strategy***
Runsheng Lin, Zihan Xing, Mingze Ma and Raymond S. T. Lee (BNU-HKBU United International College, China)

10:20 ***Improving Stock Trend Prediction with Multi-Granularity Denoising Contrastive Learning***
Mingjie Wang (BNU-HKBU United International College, China); Feng Chen (The University of Adelaide, Australia); Jianxiong Guo and Weijia Jia (Beijing Normal University, China)

10:40 ***FraudAmmo: Large Scale Synthetic Transactional Dataset for Payment Fraud Detection***
Karthikeswaren Ramachandran, Kanishka Kayathwal, Hardik Wadhwa and Gaurav Dhama (Mastercard, India)

11:00 ***MaD: A Dataset for Interview-Based BPM in Business Process Management***
Xiaoxuan Li, Lin Ni, Renee Li and Jiamou Liu (The University of Auckland, New Zealand); Mengxiao Zhang (University of Electronic Science and Technology of China, New Zealand)

11:20 ***Who are the Money Launderers? Money Laundering Detection on Blockchain via Mutual Learning-Based Graph Neural Network***
Lei Yu, Feng jun Zhang, Jia jia Ma, Li Yang and Yuan zhe Yang (Institute of Software Chinese Academy of Sciences, China); Wei Jia (Beijing Institute of Computer Technology and Applications, China)

11:40 ***Multi-Turn Dialogue Agent as Sales' Assistant in Telemarketing***
Wanting Gao (Jinan University, China); Xinyi Gao (University of Michigan, USA); Tang Yin (Jinan University, China)

10:00 – 12:00
Hybrid Learning Methods
Day1_AM_Rm3
Room: Foyer E
Session Chair: Francesco Giannini

10:00 ***How Does Knowledge Injection Help in Informed Machine Learning?***
Laura von Rueden (Fraunhofer IAIS & University of Bonn, Germany); Jochen Garcke (University of Bonn, Germany); Christian Bauckhage (Fraunhofer IAIS and University of Bonn, Germany)

10:20 ***A Symbolic-Neural Reasoning Model for Visual Question Answering***
Jingying Gao and Alan Blair (University of New South Wales, Australia); Maurice Pagnucco (The University of New South Wales, Australia)

10:40 ***ConstraintMatch for Semi-Constrained Clustering***
Jann Goschenhofer (LMU Munich & Fraunhofer IIS, Germany); Bernd Bischl (LMU Munich & Munich Center for Machine Learning, Germany); Zsolt Kira (Georgia Institute of Technology, USA)

11:00 ***C2SFormer: Rethinking the Local-Global Design for Efficient Visual Recognition Model***
Yin Tang, Xili Wan, Yaping Wu, Xinjie Guan and Aichun Zhu (Nanjing Tech University, China)

11:20 ***Continuous Variational Quantum Algorithms for Time Series***
Muhao Guo, Yang Weng, Lili Ye and Ying Cheng Lai (Arizona State University, USA)

11:40 ***Enhancing Embedding Representations of Biomedical Data Using Logic Knowledge***
Michelangelo Diligenti, Francesco Giannini, Stefano Fioravanti, Caterina Graziani and Moreno Falaschi (University of Siena, Italy); Giuseppe Marra (KU Leuven, Italy)

10:00 – 12:00
Knowledge Graphs
Day1_AM_Rm4
Room: Central Room B
Session Chair: Xin Zhang

10:00 ***MASZSL: A Multi-Block Attention-Based Description Generative Adversarial Network for Knowledge Graph Zero-Shot Relational Learning***
Mei Yu and Fan Pengtao (Tianjin University, China); Mankun Zhao (TianJin University, China); Wenbin Zhang, Yue Zhao and Jian Yu (Tianjin University, China); Ming Yang (Kennesaw State University, USA)

10:20 ***Dual Relation-Aware Entity Alignment for Knowledge Graph***
Xin Zhang, Yu Liu and Zhehuan Zhao (Dalian University of Technology, China)

10:40 ***Self-Knowledge Distillation for Knowledge Graph Embedding***
Haotian Xu (University of Science and Technology of China, China); Yuhua Wang (University of Chinese Academy of Sciences, China); Guohua Yang (Qiyuan Lab, China); Jianhua Tao and Feihu Che (Tsinghua University, China); Dawei Zhang (Qiyuan Lab, China)

11:00 ***Knowledge Graph Enhanced Sentential Relation Extraction via Dual Heterogeneous Graph Context Selection***
Bo Xu and Nian Liu (Donghua University, China); Luyi Cheng (China Mobile Group Shanghai Co., Ltd., China); Shizhou Huang, Shouang Wei, Ming Du, Hui Song and Hongya Wang (Donghua University, China)

11:20 ***Combination of Translation and Rotation in Dual Quaternion Space for Temporal Knowledge Graph Completion***
Ruiguo Yu (School of Computer Science and Technology, Tianjin University, China); Tao Liu, Jian Yu, Wenbin Zhang and Yue Zhao (Tianjin University, China); Ming Yang (Kennesaw State University, USA); Mankun Zhao (TianJin University, China); Jiujiang Guo (Australia)

11:40 ***RAN: A Relation-Aware Network for Relation Extraction***
Yile Li and Xiaoyan Gu (Institute of Information Engineering, Chinese Academy of Sciences, China); Yinliang Yue (Zhongguancun Laboratory, China); Zhuo Wang (Sangfor Inc., China); Bo Li and Weiping Wang (Institute of Information Engineering, Chinese Academy of Sciences, China)

10:00 – 12:00
Novel Feedforward Neural Networks
Day1_AM_Rm5
Room: Central Room C
Session Chair: Andrzej Nowakowski

10:00 ***Connections Between Pairs of Filters Improve the Accuracy of Convolutional Neural Networks***
Kathleen Anderson and Philipp Grüning (University of Lübeck, Germany); Erhardt Barth (University of Luebeck, Germany)

10:20 ***Antonymy-Synonymy Discrimination Through Repelling Parasiamese Neural Networks***
Mathias Etcheverry (Universidad de la República, Uruguay); Dina Wonsever (UdelaR, Uruguay)

10:40 ***Finite and Fixed-Time Stabilization for Impulsive Neural Networks***
Andrzej Nowakowski, Radosław Matusik and Anna Michalak (University of Lodz, Poland)

11:00 ***Automatic Parameter Optimisation Framework for ECoS-Based Models***
Brendon J Woodford (University of Otago, New Zealand)

11:20 ***Neuromorphic Tuning of Feature Spaces to Overcome the Challenge of Low-Sample High-Dimensional Data***
Qinghua Zhou and Oliver J Sutton (King's College London, United Kingdom (Great Britain)); Yudong Zhang and Alexander Gorban (University of Leicester, United Kingdom (Great Britain)); Valeri A. Makarov (Universidad Complutense de Madrid, Russia); Ivan Y Tyukin (King's College London, United Kingdom (Great Britain))

11:40 ***Going Deeper with Recursive Convolutional Layers***
Johan Chagnon, Markus Hagenbuchner and Ah Chung Tsoi (University of Wollongong, Australia); Franco Scarselli (University of Siena, Italy)

10:00 – 12:00
Neural Networks in Physics and Mathematics
Day1_AM_Rm6
Room: Room 5
Session Chair: Julio Valdes

10:00 ***LSA-PINN: Linear Boundary Connectivity Loss for Solving PDEs on Complex Geometry***
Jian Cheng Wong (Agency for Science, Technology and Research, Singapore); Yew Soon Ong (School of Computer Engineering, Nanyang Technological University, Singapore); Chin Chun Ooi (Agency for Science, Technology and Research & Institute of High Performance Computing, Singapore); Pao-Hsiung Chiu (Institute of High Performance Computing (IHPC) & Agency for Science, Technology and Research, Singapore); My Ha Dao (Agency for Science Technology and Research, Singapore)

10:20 ***ST-PINN: A Self-Training Physics-Informed Neural Network for Partial Differential Equations***
Junjun Yan, Xinhai Chen, Zhichao Wang and Jie Liu (National University of Defense Technology, China)

10:40 ***Improved Training of Physics-Informed Neural Networks with Model Ensembles***
Katsiaryna Haitsiukevich and Alexander Ilin (Aalto University, Finland)

11:00 ***Training Physics-Informed Neural Networks via Multi-Task Optimisation for Traffic Density Prediction***
Bo Wang, A. Kai Qin, Sajjad Shafiei and Hussein Dia (Swinburne University of Technology, Australia); Adriana-simona Mihaita (University of Technology in Sydney, Australia); Hanna Grzybowska (CSIRO Data61, Australia)

11:20 ***Approximating the Atomic Composition of Drug-Like Molecules from Quantum Derived Properties: Inverse Design***
Julio Valdes (Researcher at the National Research Council of Canada, Canada); Alain Beaudelaire Tchagang (NRC, Canada)

11:40 ***Alfvén Eigenmode Detection Using Long-Short Term Memory Networks and CO2 Interferometer Data on the DIII-D National Fusion Facility***
Alvin Garcia (University of California, Irvine, USA); Azarakhsh Jalalvand (Princeton University, USA); Peter Steiner (Technische Universität Dresden, Germany); Andy Rothstein (Princeton University, USA); Michael Van Zeeland (General Atomics, USA); William W Heidbrink (University of California Irvine, USA); Egemen Kolemen (Princeton University, USA)

10:00 – 12:00
Generative Adversarial Networks
Day1_AM_Rm7
Room: Room 6
Session Chair: Dingcheng Yang

10:00 ***FG-UAP: Feature-Gathering Universal Adversarial Perturbation***
Zhixing Ye, Cheng Xinwen and Xiaolin Huang (Shanghai Jiao Tong University, China)

10:20 ***Generating Adversarial Examples with Better Transferability via Masking Unimportant Parameters of Surrogate Model***
Dingcheng Yang and Wenjian Yu (Tsinghua University, China); Zihao Xiao (RealAI Inc., China); Jiaqi Luo (Tsinghua University, China)

10:40 ***Class-Balanced Universal Perturbations for Adversarial Training***
Kexue Ma, Guitao Cao, Mengqian Xu and Chunwei Wu (East China Normal University, China); Hong Wang (Shanghai Research Institute of Microwave Equipment, China); Wenming Cao (Shenzhen University, China)

11:00 ***Incorporating Least-Effort Loss to Stabilize Training of Wasserstein GAN***
Fanqi Li, Lin Wang and Bo Yang (University of Jinan, China); Pengwei Guan (Shangdong Qiuqi Analysis Instrument CO., LTD., China)

11:20 ***Feature Stylization Adversarial Domain Generalization***
Zhengzhong Hu (East China Normal University, China)

11:40 ***Improving Single-Step Adversarial Training by Local Smoothing***
Wang Shaopeng (ECNU, China); Yanhong Huang and Jianqi Shi (East China Normal University, China); Yang Yang and Xin Guo (ECNU, China)

10:00 – 12:00
Special Session: Machine Learning and Deep Learning Methods applied to Vision and Robotics (MLDLMVR): Part 1
Day1_AM_Rm8
Room: Room 7
Session Chairs: José García-Rodríguez and Alexandra Psarrou

10:00 ***Augmented Spatial Context Fusion Network for Scene Graph Generation***
Hongbo Xu, Lichun Wang, Kai Xu, Fangyu Fu and Baocai Yin (Beijing University of Technology, China); Huang Qingming (University of Chinese Academy of Sciences, China)

10:20 ***Sample-Efficient Grasping Viewpoint Selection with Contrastive Reinforcement Learning***
Weiwen Chen, Yun Hua, Bo Jin and Xiangfeng Wang (East China Normal University, China)

10:40 ***Towards Efficient Knowledge Reuse for Open-Ended Learning in Real Robots Through Motivation***
Alejandro Romero (Universidade da Coruña, Spain); Francisco Bellas (University of Coruna, Spain); José Antonio Becerra (Universidade da Coruña, Spain); Richard J. Duro (Universidad de la Coruña, Spain)

11:00 ***Multi-Task Meta Learning: Learn How to Adapt to Unseen Tasks***
Richa Upadhyay and Prakash Chandra Chhipa (Luleå University of Technology, Sweden); Ronald Phlypo (Univ Grenoble Alpes, CNRS, Grenoble INP, GIPSA-lab, France); Rajkumar Saini (Luleå University of Technology, Sweden); Marcus Liwicki (Lulea University of Technology, Sweden)

11:20 ***TEMI-MOT: Towards Efficient Multi-Modality Instance-Aware Feature Learning for 3D Multi-Object Tracking***
Yufeng Hu, Sanping Zhou, Jinpeng Dong and Nanning Zheng (Xi'an Jiaotong University, China)

11:40 ***Towards Multi-User Activity Recognition Through Facilitated Training Data and Deep Learning for Human-Robot Collaboration Applications***

Francesco Semeraro (The University of Manchester, United Kingdom (Great Britain)); Jon Carberry (BAE Systems Plc., United Kingdom (Great Britain)); Angelo Cangelosi (Manchester, USA)

10:00 – 12:00
Special Session: Advanced artificial intelligence techniques for medical decision- making: challenges and opportunities
Day1_AM_Rm9
Room: Room 8
Session Chairs: Lourdes Martínez-Villaseñor and Guanjin Wang

10:00 ***Detection of Retinal Microlesions Through YOLOR-CSP Architecture and Image Slicing with the SAHI Algorithm***
Carlos Santos (Federal Institute of Education, Science and Technology Farroupilha, Brazil); Alejandro Pereira (Federal University of Pelotas, Brazil); Marilton S Aguiar (Universidade Federal de Pelotas, Brazil); Daniel Welfer (Federal University of Santa Maria, Brazil); Marcelo Dias and Marcelo Ribeiro (Federal University of Pelotas, Brazil); Reza Ahmadi (Geobotica, Australia)

10:20 ***SegQNAS: Quantum-Inspired Neural Architecture Search Applied to Medical Image Semantic Segmentation***
Guilherme Baldo Carlos (Pontifical Catholic University of Rio de Janeiro, Brazil); Karla Tereza Figueiredo Leite (Universidade do Estado do Rio de Janeiro, Brazil); Abir Hussain (University of Sharjah, United Arab Emirates); Marley Vellasco (Pontifícia Universidade Católica do Rio de Janeiro, Brazil)

10:40 ***Self-Supervision and Weak Supervision for Accurate and Interpretable Chest X-Ray Classification Models***
Abhiroop Talasila, Akshaya Karthikeyan, Shanmukh Alle, Maitreya Maity and U. Deva Priyakumar (International Institute of Information Technology, Hyderabad, India)

11:00 ***LoGo Transformer: Hierarchy Lightweight Full Self-Attention Network for Corneal Endothelial Cell Segmentation***
Yinglin Zhang (University of Nottingham Ningbo China, China); Zichao Cai (Southern University of Science and Technology, China); Risa Higashita (Tomey Corporation, Japan); Jiang Liu (Southern University of Science and Technology, China)

11:20 ***SparGE: Sparse Coding-Based Patient Similarity Learning via Low-Rank Constraints and Graph Embedding***
Yingjie Liu (East China Normal University, China); Xian Wei (Technische Universität München, Germany); See-Kiong Ng (National University of Singapore, Singapore); Tongtong Zhang (Shanghai Jiao Tong University, China); Mingsong Chen and Xuan Tang (East China Normal University, China)

11:40 ***Demystifying Complex Treatment Recommendations: A Hierarchical Cooperative Multi-Agent RL Approach***
Dilruk Perera and Siqi Liu (National University of Singapore, Singapore); Mengling Feng (National University of Singapore, USA)

10:00 – 12:00
Virtual: Feature Selection, Extraction, and Aggregation
Day1_AM_RmV1
Room: Virtual Room 1
Session Chair: Le Fang and Yin Wang

10:00 ***Event Extraction Based on the Fusion of Dynamic Prompt Information and Multi-Dimensional Features***
Yin Wang, Nan Xia, Luo Xiangfeng and Hang Yu (Shanghai University, China)

10:20 ***HES: Edge Sampling for Heterogeneous Graphs***
Le Fang and Chuan Wu (The University of Hong Kong, Hong Kong)

10:40 ***Lorentzian Graph Convolution Networks for Collaborative Filtering***
Zihong Zhu (Qilu University of Technology, China); Weiyu Zhang (13854198081, China); Xinchao Guo (Qilu University of Technology(Shandong Academy of Sciences), China); Xinxiao Qiao (Qilu University of Technology, China)

11:00 ***Learning Rich Detailed Features and Object Relations for Object Detection***
Yuantian Xia (China Agricultural University, China); Lu Shuhan (University of Michigan, China); Wang Longhe and Li Lin (China Agricultural University, China)

11:20 ***Multi-Dimensional Semantic-Based Text Classification Model***
Xiaoyan GongYe, Chongxu Hu and Xiaohu Zhang (Qufu Normal University, China)

11:40 ***Multi-Source Multi-Label Feature Selection***
Xiulan Yuan, Xuegang Hu and Peipei Li (Hefei University of Technology, China)

10:00 – 12:00
Virtual: Neural Networks for Image and Video Enhancement
Day1_AM_RmV2
Room: Virtual Room 2
Session Chair: Xiao-Feng Zhang and Charlie J Haywood

10:00 ***Attention-Capsule Network for Low-Light Image Recognition***
Shiqi Shen, Zetao Jiang and Xiaochun Lei (Guilin University of Electronic Technology, China); Xu Wu (Shenzhen University, China); Yuting He (Guilin University of Electronic Technology, China)

10:20 ***Model Driven Deep Unfolding Network for Extreme Low-Light Image Enhancement and Denoising***
Shuang Cui (University of Chinese Academy of Sciences & Institute of Software, Chinese Academy of Sciences, China); Fanjiang Xu (Institute of Software Chinese Academy Sciences, China); Xiongxin Tang (Institute of Software, Chinese Academy of Science, China); Quan Zheng (Institute of Software, Chinese Academy of Sciences, China)

10:40 ***SpA-Former: An Effective and Lightweight Transformer for Image Shadow Removal***
Xiao-Feng Zhang, Yudi Zhao and Chaochen Gu (Shanghai Jiao Tong University, China); Chang-Sheng Lu (The Australian National University, China); Shanying Zhu (Shanghai Jiao Tong University, China)

11:00 ***Real-Time Blind Deblurring Based on Lightweight Deep-Wiener-Network***
Charlie J Haywood (USA); Rabih Younes (Duke University, USA)

11:20 ***Boosting External-Reference Image Quality Assessment by Content-Constrain Loss and Attention-Based Adaptive Feature Fusion***
Wenbo Shi, Yang Wenming and Qingmin Liao (Tsinghua University, China)

11:40 ***SwinVI:3D Swin Transformer Model with U-Net for Video Inpainting***
Wei Zhang, Yang Cao and Junhai Zhai (Hebei University, China)

10:00 – 12:00
Virtual: Text Summarisation and Classification
Day1_AM_RmV3
Room: Virtual Room 3
Session Chair: Xurong Lu and Zhihao Fan

10:00 ***Semi-Supervised Short Text Classification Based on Dual-Channel Data Augmentation***
Jiajun Li, Peipei Li and Xuegang Hu (Hefei University of Technology, China)

10:20 ***Improved Keyword Recognition Based on Aho-Corasick Automaton***
Yachao Guo (Xinjiang University & National University of Singapore, China); Hao Huang (Xinjiang University, China); Eng-Siong Chng (Nanyang Technological University, Singapore); Zhibin Qiu (XinJiang University, China)

10:40 ***Topic-Aware Modeling for Unsupervised Extractive Summarization***
Zhihao Fan, Huiyong Li, Shasha Mo and Jianwei Niu (Beihang University, China)

11:00 ***A Semantic and Structural Transformer for Code Summarization Generation***
Ruyi Ji (Institute of Software Chinese Academy of Sciences, China); Zhenyu Tong (University of Chinese Academy of Sciences, China); Libo Zhang (Institute of Software Chinese Academy of Sciences, China); Tiejian Luo (University of Chinese Academy of Sciences, China); Jing Liu (Institute of Automation, Chinese Acadamy of Sciences, China)

11:20 ***Enhancing Source Code Summarization from Structure and Semantics***
Xurong Lu and Jun Niu (Ningbo University, China)

11:40 ***CEntRE: A Paragraph-Level Chinese Dataset for Relation Extraction Among Enterprises***
Peipei Liu (University of Chinese Academy of Sciences, China); Hong Li (Institute of Information Engineering, Chinese Academy of Sciences, China); Zhiyu Wang (Henan University, China); Yimo Ren (Institute of Information Engineering, Chinese Academy of Sciences, China); Jie Liu (University of Chinese Academy of Sciences, China); Fei Lyu (Institute of Information Engineering Chinese Academy of Sciences, China); Hongsong Zhu (Institute of Information Engineering, Chinese Academy of Sciences, China); Limin Sun (Institute of Information Engineering, China Academy of Science, Beijing, China)

10:00 – 12:00
Virtual: Dialogue Systems and knowledge Discovery
Day1_AM_RmV4
Room: Virtual Room 4
Session Chair: Anna Scampicchio

10:00 ***Modeling Global-Local Subtopic Distribution with Hypergraph to Diversify Search Results***
Kai Ouyang, Xianghong Xu, Zuotong Xie and Haitao Zheng (Tsinghua University, China); Yanxiong Lu (Tencent, China)

10:20 ***TransD-Based Multi-Hop Meta Learning for Few-Shot Knowledge Graph Completion***
Li Jindi, Yu Kui, Li Yuling and Zhang Yuhong (Hefei University of Technology, China)

10:40 ***Modality-Aware Negative Sampling for Multi-Modal Knowledge Graph Embedding***
Yichi Zhang, Mingyang Chen and Wen Zhang (Zhejiang University, China)

11:00 ***Please Don't Answer Out of Context: Personalized Dialogue Generation Fusing Persona and Context***
Fucheng Wang and Yunfei Yin (Chongqing University, China); Faliang Huang (Fujian Normal University, China); KaiGui Wu (Chongqing University, China)

11:20 ***An Anchor-Semantics-Aware Neural Preference Propagation Model for Session-Based Recommendation***
Yaxuan Ye and Ning Yang (Sichuan University, China)

11:40 ***SweetCoat-2D: Two-Dimensional Bangla Spelling Correction and Suggestion Using Levenshtein Edit Distance and String Matching Algorithm***
Md Mahadi Hasan, David Dew Mallick, Towhid Khan and MD. Mustakin Alam (BRAC University, Bangladesh); Md Humaion Kabir Mehedi and Annajiat Alim Rasel (Brac University, Bangladesh)

12:00 – 13:00
Lunch on your own

12:00 – 13:00
Town Hall Luncheon
Room: Arena 2

13:00 – 15:00
Event Extraction Using Neural Networks
Day1_PM1_Rm1
Room: Arena 1B
Session Chair: Shiya Luo

13:00 ***Chinese Event Temporal Relation Extraction on Multi-Dimensional Attention***
Fan Yang, Sheng Xu, Peifeng Li and Qiaoming Zhu (Soochow University, China)

13:20 ***A Three-Stage Pipeline for Conditional Entity and Relation Extraction***
Jiahao Wang and Jing Yang (East China Normal University, China)

13:40 ***CghEAE: A Domain Knowledge-Guided Framework for Event Argument Extraction from Chinese Government Hotline***
Zhengquan Ding (University of Science and Technology of China, China)

14:00 ***Knowledge Distillation with Deep Supervision***
Shiya Luo, Defang Chen and Can Wang (Zhejiang University, China)

14:20 ***Learning Golf Swing Key Events from Gaussian Soft Labels Using Multi-Scale Temporal MLPFormer***
Yanting Zhang and Fuyu Tu (Donghua University, China); Dandan Zhu (East China Normal University, China); Zijian Wang and Wenjing Guo (Donghua University, China)

14:40 ***Revealing Causal Graph Structure in Pigeon Flocks Using Attentions in Temporal ConvNet***
Jimson Paulo Layacan, Aengus Martin Donaire, Harvey Felipe and Clark Kendrick C Go (Ateneo de Manila University, Philippines)

13:00 – 15:00
Forecasting Using Neural Networks: Part 1
Day1_PM1_Rm2
Room: Arena 1A
Session Chair: Vishu Gupta

13:00 ***All for Goals: A Stylized Automated Analysis Framework in Football Matches***
Min Chen (Institute of Automation, Chinese Academy of Sciences & School of Artificial Intelligence, University of Chinese Academy of Sciences, China); Zhiqiang Pu and Yi Pan (Institute of Automation Chinese Academy of Sciences, China); Jianqiang Yi (Institute of Automation, Chinese Academy of Sciences, China); Yixiong Cui (Beijing Sport University, China); Lida Du (China Football College, China)

13:20 ***MTSNet: Deep Probabilistic Cross-Multivariate Time Series Modeling with External Factors for COVID-19***
Yang Yang and Longbing Cao (University of Technology Sydney, Australia)

13:40 ***Pre-Activation Based Representation Learning to Enhance Predictive Analytics on Small Materials Data***
Vishu Gupta, Wei-keng Liao, Alok Choudhary and Ankit Agrawal (Northwestern University, USA)

14:00 ***AI for Learning Deformation Behavior of a Material: Predicting Stress-Strain Curves 4000x Faster than Simulations***
Yuwei Mao (Northwestern University, USA); Shahriyar Keshavarz (National Institute of Standards and Technology, USA); Vishu Gupta (Northwestern University, USA); Andrew C. Reid (National Institute of Standards and Technology, USA); Wei-keng Liao, Alok Choudhary and Ankit Agrawal (Northwestern University, USA)

14:20 ***Learning Meta-Representations of One-Shot Relations for Temporal Knowledge Graph Link Prediction***
Zifeng Ding (LMU Munich & Siemens AG, Germany); Bailan He (LMU, Germany); Jingpei Wu (Technical University of Munich, Germany); Yunpu Ma (Ludwig Maximilian University of Munich & Siemens CT, Germany); Zhen Han (Amazon, United Kingdom (Great Britain)); Volker Tresp (Siemens, Germany)

13:00 – 15:00
Neural Networks for Image Classification: Part 1
Day1_PM1_Rm3
Room: Foyer E
Session Chair: Prakash Chandra Chhipa

13:00 ***Occluded Gait Recognition***
Yunjie Peng (Beihang University, China); Chunshui Cao (Watrix Technology Limited Co. Ltd., China); Zhiqiang He (Beihang University, China)

13:20 ***Do We Train on Test Data? The Impact of Near-Duplicates on License Plate Recognition***
Rayson Laroca (Federal University of Paraná (UFPR), Brazil); Valter Estevam (Federal University of Paraná, Brazil); Alceu S. Britto Jr. (Pontifical Catholic University of Paraná, Brazil); Rodrigo Minetto (Federal University of Technology-Paraná, Brazil); David Menotti (UFPR, Brazil)

13:40 ***A Robust Hybrid Identification Framework Combines Gait and Face Recognition***
Zou Shijun and Wu Wei (Inner Mongonia University, China)

14:00 ***FAU-Gaze: Fast and Accurate User-Specific Gaze Estimation Framework***
Ye Ding (Dongguan University of Technology, China); Li Lu (DongGuan University of Technology, China); Ziyuan Liu and Songjie Wu (Dongguan University of Technology, China); Qing Liao (Harbin Institute of Technology（Shenzhen）, China)

14:20 ***Faces are Domains: Domain Incremental Learning for Expression Recognition***
Rahul Singh Maharjan (University of Manchester, United Kingdom (Great Britain)); Marta Romeo (Heriot-Watt University & The University of Manchester, United Kingdom (Great Britain)); Angelo Cangelosi (Manchester, USA)

14:40 ***Learning Self-Supervised Representations for Label Efficient Cross-Domain Knowledge Transfer on Diabetic Retinopathy Fundus Images***
Ekta Gupta, Varun Gupta and Muskaan Chopra (Chandigarh College of Engineering and Technology, India); Prakash Chandra Chhipa (Luleå University of Technology, Sweden); Marcus Liwicki (Lulea University of Technology, Sweden)

13:00 – 15:00
Cognitive Architectures
Day1_PM1_Rm4
Room: Central Room B
Session Chair: Raju Surampudi Bapi

13:00 ***Community Synchronization of Functional Brain Network with Cognitive Training***
Guoguang He, Kexin Ma, Guiyang Lv, Feiyan Chen and Ping Zhu (Zhejiang University, China)

13:20 ***Optimal Excitatory and Inhibitory Balance for High Learning Performance in Spiking Neural Networks with Long-Tailed Synaptic Weight Distributions***
Ibuki Matsumoto and Sou Nobukawa (Chiba Institute of Technology, Japan); Tomoki Kurikawa (Future University Hakodate, Japan); Nobuhiko Wagatsuma (Toho University, Japan); Yusuke Sakemi (Chiba Institute of Technology, Japan); Takashi Kanamaru (Kogakuin University, Japan); Nina Sviridova (Tokyo City University, Japan); Kazuyuki Aihara (The University of Tokyo, Japan)

13:40 ***Emergence of Direction Selectivity and Motion Strength in Dot Motion Task Through Deep Reinforcement Learning Networks***
Dolton Milagres Fernandes and Pramod Kaushik (International Institute of Information Technology Hyderabad, India); Raju Surampudi Bapi (International Institute of Information Technology, India)

14:00 ***Modelling Grid Navigation Using Reinforcement Learning Linear Ballistic Accumulators***
Gautham Venugopal (International Institute of Information Technology, Hyderabad, India); Raju Surampudi Bapi (International Institute of Information Technology, India)

14:20 ***Characterizing Neural Activity in Cognitively Inspired RL Agents During an Evidence Accumulation Task***
James Mochizuki-Freeman, Sahaj Singh Maini and Zoran Tiganj (Indiana University, USA)

14:40 ***Dynamic Functional Connectivity Analysis in Individuals with Autism Spectrum Disorder***
Pindi Krishna Chandra Prasad and Kamalaker Dadi (International Institute of Information Technology Hyderabad, India); Raju Surampudi Bapi (International Institute of Information Technology, India)

13:00 – 15:00
Probabilistic and Information-Theoretic Methods
Day1_PM1_Rm5
Room: Central Room C
Session Chairs: Alina N Bialkowski and Marley Vellasco

13:00 ***Prototypical Model with Information-Theoretic Loss Functions for Generalized Zero-Shot Learning***
Chunlin Ji (Kuang-Chi Institute of Advanced Technology); Zhan Xiong (Kuang-Chi Institute of Advanced Technology, China); Meiying Zhang (Southern University of Science and Technology, China); Huiwen Yang (University of California Berkeley, USA); Feng Chen and Hanchun Shen (Kuang-Chi Institute of Advanced Technology, China)

13:20 ***Online Probabilistic Model Identification Using Adaptive Recursive MCMC***
Pedram Agand and Mo Chen (Simon Fraser University, Canada); Hamid D. Taghirad (K. N. Toosi University of Technology, Iran)

13:40 ***Multi-Objective Machine Training Based on Bayesian Hyperparameter Tuning***
Pedro J Zufiria, Carlos Borrajo and Miguel Taibo (Universidad Politécnica de Madrid, Spain)

14:00 ***Multimodal Cross-Attention Bayesian Network for Social News Emotion Recognition***
Xinzhi Wang, Mengyue Li, Yudong Chang, Luo Xiangfeng, Yige Yao and Zhichao Li (Shanghai University, China)

14:20 ***An Autonomous Non-Monolithic Agent with Multi-Mode Exploration Based on Options Framework***
JaeYoon Kim, Junyu Xuan, Christy Jie Liang and Farookh Khadeer Hussain (University of Technology Sydney, Australia)

14:40 ***Tolerating Device-To-Device Variation for Memristive Crossbar-Based Neuromorphic Computing Systems: A New Bayesian Perspective***
Yang Xiao (Southern University of Science and Technology, China); Qi Xu (University of Science and

Technology of China, China); Bo Yuan (Southern University of Science and Technology, China)

13:00 – 15:00
Brain-Inspired Architectures
Day1_PM1_Rm6
Room: Room 5
Session Chair: Artem R. Muliukov

13:00 ***SONA: A Bio-Inspired, Self-Organizing Connective Fabric for Neuromorphic Circuits and FPGAs***
David Battel and Alice Parker (University of Southern California, USA)

13:20 ***SS-Faster-RCNN: A Domain Adaptation-Based Method to Detect Whether People Wear Masks Correctly***
Boran Yang (National University of Singapore, Singapore & Australian National University, Australia); Md Zakir Hossain (Research Fellow, Australia); Shafin Rahman (North South University, Bangladesh)

13:40 ***Homeostatic Reinforcement Learning Through Soft Behavior Switching with Internal Body State***
Naoto Yoshida, Hoshinori Kanazawa and Yasuo Kuniyoshi (The University of Tokyo, Japan)

14:00 ***Cortex Inspired Learning to Recover Damaged Signal Modality by ReD-SOM Model***
Artem R. Muliukov (University Cote d'Azur & LEAT, France); Laurent Yvon Rodriguez and Benoit Miramond (University Cote d'Azur / LEAT / CNRS UMR 7248, France)

14:20 ***Generalization Across Subjects and Sessions for EEG-Based Emotion Recognition Using Multi-Source Attention-Based Dynamic Residual Transfer***
Wanqing Jiang (University of Chinese Academy of Sciences & Institute of Automation, Chinese Academy of Sciences, China); Gaofeng Meng (Institute of Automation, Chinese Academy of Sciences, China); Tianzi Jiang (Institute of Automation Chinese Academy of Sciences, China); Nianming Zuo (Institute of Automation, Chinese Academy of Sciences, China)

14:40 ***Representing Latent Dimensions Using Compressed Number Lines***
Sahaj Singh Maini, James Mochizuki-Freeman and Chirag Shankar Indi (Indiana University, USA); Brandon Jacques and Per B. Sederberg (University of Virginia, USA); Marc W Howard (Boston University, USA); Zoran Tiganj (Indiana University, USA)

13:00 – 15:00
Neural Network Hardware
Day1_PM1_Rm7
Room: Room 7
Session Chair: Jie Shao

13:00 ***The Low-Rank Double-Scale Convolutional Neural Network for Parameter Identification of DC Bus Capacitor in Smart Transformer***
Xiaohui Li, Zhongkui Zhu, He Liqun and Yu-e Sun (Soochow University, China); Yu Chen (HUST, China)

13:20 ***A Novel Hardware-Efficient Ergodic Sequential Logic Spiking Neural Network and Reproductions of Biologically Plausible Spatio-Temporal Phenomena Towards Development of Neural Prosthetic Device***
Yuta Shiomi and Hiroyuki Torikai (Hosei University, Japan)

13:40 ***G&L: An Attention-Based Model for Improving Prefetching in Solid-State Drives***
Chenxu Yang, Xin Man and Jie Shao (University of Electronic Science and Technology of China, China)

14:00 ***A Neurally Guided Patch-Based Style Transfer for Mobile Devices***
José Ivson S. Silva and Kevin Ian R. Vargas (Universidade Federal de Pernambuco - UFPE, Brazil); Carlos Antônio A. Júnior, Lucas Pontes de Albuquerque, Mateus Baltazar de Almeida, Allan Soares Vasconcelos, Victor Ximenes C. Oliveira, José Gabriel P. Tavares and Danilo Vaz Marcolino Alves (Universidade Federal de Pernambuco, Brazil); Diêgo J. C. Santiago, Bernardo Augusto de Oliveira and Carlos Padilha (Motorola Mobility, Brazil); Ing Ren Tsang (Universidade Federal de Pernambuco - UFPE & Centro de Informática - CIn, Brazil)

14:20 ***A Novel Ergodic Sequential Logic CPG: Efficient FPGA Implementation and Realizations of Various Gaits and Their Safe Transitions***
Kento Nakamura and Hiroyuki Torikai (Hosei University, Japan)

14:40 ***Reinforcement-Learning-Based Deadline Constrained Task Offloading Schema for Energy Saving in Vehicular Edge Computing System***
Do Bao Son (University of Transport Technology, Vietnam); Huu Binh Ta (Hanoi University of Science and Technology, Vietnam); Hiep K Vo (University of Technology Sydney, Australia); Minh Binh Nguyen (Hanoi University of Science and Technology & School of Information and Communication Technology, Vietnam); Hoang-Hai Tran (School of Information and Communication Technology, Hanoi University of Science and Technology, Vietnam); Huynh Thi Thanh Binh (HUST, Vietnam)

13:00 – 15:00
Special Session: Machine Learning and Deep Learning Methods applied to Vision and Robotics (MLDLMVR): Part 2
Day1_PM1_Rm8
Room: Room 6
Session Chairs: José García-Rodríguez and Alexandra Psarrou

13:00 ***Inclusive Normalization of Face Images to Passport Format***
Hongliu Cao, Minh Nhat Do and Alexis Ravanel (Amadeus, France); Eoin Thomas (UCC, Ireland)

13:20 ***LGWAE: Label-Guided Weighted Autoencoder Network for Flexible Targeted Attacks of Deep Hashing***
SiZheng Fu, Chunjie Cao, Fangjian Tao, Binghui Zou, Xiaoyu Lin and Jingzhang Sun (Hainan University, China)

13:40 ***How Object Information Improves Skeleton-Based Human Action Recognition in Assembly Tasks***
Dustin Aganian, Mona Köhler, Sebastian Baake, Markus Eisenbach and Horst-Michael Gross (Ilmenau University of Technology, Germany)

14:00 ***To Whom are You Talking? A Deep Learning Model to Endow Social Robots with Addressee Estimation Skills***
Carlo Mazzola (Istituto Italiano di Tecnologia & University of Genoa, Italy); Marta Romeo (Heriot-Watt University & The University of Manchester, United Kingdom (Great Britain)); Francesco Rea and Alessandra Sciutti (Istituto Italiano di Tecnologia, Italy); Angelo Cangelosi (University of Manchester, United Kingdom (Great Britain))

14:20 ***PointART: Point Cloud Classification with Anti-Redundant Transformer***
Ruixiang Bai, Yu Gao, Le Cheng and Da-Wei Ding (University of Science and Technology Beijing, China)

14:40 ***Learning Arc-Length Value Function for Fast Time-Optimal Pick and Place Sequence Planning and Execution***
Arun kumar Singh and Prajwal Thakur Thakur (University of Tartu, Estonia); K Madhava Krishna (IIIT H, India); Brojeshwar Bhowmick (TCS, Kolkata, India); Houman Masnavi (University of Tartu, Estonia); Mohammad Nomaan Qureshi (International Institute of Information Technology, Hyederabad, India); Pushkal Katara (Carnegie Mellon University, USA); Yvs Harish (Amazon Inc, India)

13:00 – 15:00
Image Super-Resolution and Generation
Day1_PM1_Rm9
Room: Room 8
Session Chair: Tian Gan

13:00 ***DDA: A Dynamic Difficulty-Aware Data Augmenter for Image Super-Resolution***
Xinyi Zhang (Tsinghua University, China); Tao Dai (Tsinghua Shenzhen International Graduate School, China); Bin Chen (Harbin Institute of Technology, Shenzhen, China); Shutao Xia (Tsinghua University, China)

13:20 ***Multi-Scale Non-Local Sparse Attention for Single Image Super-Resolution***
Xianwei Xiao (Suzhou University, China); Baojiang Zhong (Soochow University, China)

13:40 ***Compact Cross-Reparam Convolution Network for Efficient Image Super-Resolution***
Eaven Huang, Runan Wang, Yifan Wang and Tuo Leng (Shanghai University, China)

14:00 ***Enhancing Chinese Calligraphy Generation with Contour and Region-Aware Attention***
Jinshan Zeng, Ling Tu, Jie Zhou, Yefei Wang and Jiguo Zeng (Jiangxi Normal University, China)

14:20 ***Multihead Attention-Based Audio Image Generation with Cross-Modal Shared Weight Classifier***
Yiming Xu (University of Amsterdam & Vrije University Amsterdam, The Netherlands)

14:40 ***CDNet: Cross-Frequency Dual-Branch Network for Face Anti-Spoofing***
Xiaobin Huang (Institute of Computer Vision, Shenzhen University, China); Qiufu Li and Linlin Shen (Shenzhen University, China); Xingwei Chen (China)

13:00 – 15:00
Virtual: Deep Learning Architecture: Part 2
Day1_PM1_RmV1
Room: Virtual Room 1
Session Chair: Tamara Tosic and Mingxue Liao

13:00 ***FLCAP: Federated Learning with Clustered Adaptive Pruning for Heterogeneous and Scalable Systems***
Hugo Miralles (Orange Innovation & Université Côte d'Azur, France); Tamara Tosic (Orange Innovation, France); Michel Riveill (Universite Cote d Azur, France)

13:20 ***DenseStream: A Novel Data Representation for Gradient Sparsification in Distributed Synchronous SGD Algorithm***
Guangyao Li, Mingxue Liao, Yongyue Chao and Pin Lv (Institute of Automation, Chinese Academy of Sciences, China)

13:40 ***3DSEAVNet: 3D-Squeeze-And-Excitation Networks for Audio-Visual Saliency Prediction***
Minghui Sun (JiLin University, China); Silong Liang, Chunxiao Li, Naying Cui and Hao Xue (Jilin University, China)

14:00 ***Meta-MSGAT: Meta Multi-Scale Fused Graph Attention Network***
Ting Chen (, China & Tiangong University, China); Jianming Wang and Yukuan Sun (Tiangong University, China)

14:20 ***A New Spatial Pooler Algorithm Based on Heterogeneous Hash Group***
Dejiao Niu and Zhidong Wang (Jiangsu University, China); Tao Cai (JiangSu University, China); Lei Li, Jie Jiang and YuHan Chen (Jiangsu University, China); Zhuoran Li (National University of Singapore, Singapore)

14:40 ***SAR: Self-Supervised Anti-Distortion Representation for End-To-End Speech Model***
Jianzong Wang (Pingan, China); Xulong Zhang (Shangfeng Road NO. 1288 & Ping An Technology (Shenzhen) Co., Ltd., China); Haobin Tang (Ping an Technology, China); Aolan Sun (Ping An Technology, China); Ning Cheng (Pingan, China); Jing Xiao (Ping An Insurance Company of China, Ltd., China)

13:00 – 15:00
Virtual: Biomedical Applications of Neural Networks: Part 1
Day1_PM1_RmV2
Room: Virtual Room 2
Session Chair: Cory Kromer-Edwards and Li-Dan Kuang

13:00 ***Using Feature Selection from XGBoost to Predict MIC Values with Neural Networks***
Cory Kromer-Edwards (University of Iowa, USA); Mariana Castanheira (JMI Laboratories, USA); Suely Oliveira (University of Iowa, USA)

13:20 ***MobileNet-Light: A Lightweight TCT Image Classification Model for Cervical Cancer***
XingWen Pan (University of DongHua, China); Dehua Chen and Chengzhuan Bao (Donghua University, China)

13:40 ***Incorporating Spatial Sparsity Constraint into Complex IVA of Multi-Subject Complex-Valued fMRI Data***
Chao Ying Zhang and Wei Xing Li (Dalian University of Technology, China); Lidan Kuang (Changsha University of Science and Technology, China); Qiuhua Lin (Dalian University of Technology, China)

14:00 ***Fusing Morphological and Temporal Features for ECG Heartbeat Classification Using CapsNet and ResNet***
Raj Pranesh and Aditi Pallod (Penn State University, USA)

14:20 ***MS-BioAP: A Pipeline for Biomarker Analysis Based on Data Independent Acquisition Mass Spectrometry***
Zhenhua Zhang (DongHua University, China); Dehua Chen, Mei Wang and Qiao Pan (Donghua University, China); Zhen Wang (Shanghai Mental Health Center, Shanghai Jiao Tong University School of Medicine, China)

14:40 ***Automatic Hemiplegia Gait Assessment for Post-Stroke by an Attention-Based Lightweight CNN***
Chengju Zhou (South China Normal University & Software School, China); Daqin Feng, Lewei He and Nianming Ban (South China Normal University, China); Shuxi Wang (South China Normal University & Software School, China); Jiahui Pan (South China Normal University, China)

13:00 – 15:00
Virtual: Medical Image Processing Using Neural Networks
Day1_PM1_RmV3
Room: Virtual Room 3
Session Chair: Bowen Jiang and Junjie Cui

13:00 ***Zero-Shot Adaptive Low Light Enhancement with Retinex Decomposition and Hybrid Curve Estimation***
Yuping Xia (University of Chinese Academy of Sciences & Institute of Software, Chinese Academy of Sciences, China); Fanjiang Xu (Institute of Software Chinese Academy Sciences, China); Quan Zheng (Institute of Software, Chinese Academy of Sciences)

13:20 ***A Multi-Task Network with Centerline Supervision for 3D Pelvis Artery Segmentation on CECT Images***
Junjie Cui (Sichuan University, China); Yi Zhang (SiChuan University, China); Min Xie and Haixian Zhang (Sichuan University, China)

13:40 ***Semantics-Guided Hierarchical Feature Encoding Generative Adversarial Network for Natural Image Reconstruction from Brain Activities***
Meng Lu (Northeastern University, China); Chuanhao Yang (Northeastern Unviersity, China)

14:00 ***Weighted Spatial Pooling Preprocessing for Rank-(L, L,1,1) BTD with Orthonormality: Application to Multi-Subject fMRI Data***
Lidan Kuang, HaoPeng Zhang and Jianming Zhang (Changsha University of Science and Technology, China); Qiuhua Lin (Dalian University of Technology, China)

14:20 ***Thermal Noise Removal of Magnetic Resonance Images: A Deep Learning Approach Based on an Attentive Residue Multi-Dilated Network with Adaptive Filtering and Discrete Cosine Transform***
Bowen Jiang, Tao Yue and Xuemei Hu (Nanjing University, China)

14:40 ***A Multi-Task Learning Model for Gold-Two-Mention Co-Reference Resolution***
Ruicheng Liu (Nanyang Technological University, Singapore); Guanyi Chen (Utrecht University, The Netherlands); Rui Mao and Erik Cambria (Nanyang Technological University, Singapore)

13:00 – 15:00
Virtual: Neural Networks for Object Detection: Part 1
Day1_PM1_RmV4
Room: Virtual Room 4
Session Chair: Song Gong and Yang Li

13:00 ***An Oriented Object Detector Towards Diatoms***
Song Gong and Kaijie Wu (Shanghai Jiao Tong University, China); Lihua Ran and Zhiying Xia (State Oceanic Administration, China); Chaochen Gu (Shanghai Jiao Tong University, China); Changsheng Lu (The Australian National University, China); Tongkun Guan and Yudi Zhao (Shanghai Jiao Tong University, China)

13:20 ***Graph Pruning and Representation Learning for Stance Detection***
Yang Li and Jianing Xu (Northeast Forestry University, China)

13:40 ***L-Yolov5: A Multi-Scale Channel Attention-Based Method for Real-Time Safety Helmet Detection of Electrical Construction Workers***
Tian yang Li, Han wen Xu, Ying nan Han, Yi Zhao and Hong bin Yan (Northeast Electric Power University, China)

14:00 ***Detection of Electric Component Based on Improved Faster-RCNN***
Xiao Cheng Ling, Dongdong Zhang and Chengyu Sun (Tongji University, China)

14:20 ***Few Shot Object Detection with Incompletely Annotated Samples***
Bo Qiao, Huajun Zhou, Lingxiao Yang and Xiaohua Xie (Sun Yat-Sen University, China)

14:40 ***Domain-Generic Pre-Training for Low-Cost Entity Matching via Domain Alignment and Domain Antagonism***
Hui Bai, Derong Shen, Wenzhou Dou, Tiezheng Nie and Yue Kou (Northeastern University, China)

15:00 – 15:30
Coffee Break
Room: Hall 1

15:30 – 16:30
Plenary: Barbara Webb
Room: Arena 1B
Session Chairs: Deliiang Wang and Marley Vellasco

Modelling The Neural Mechanisms of Navigation In Insects
Barbara Webb
University of Edinburgh

Insect navigation has been a focus of behavioural study for many years, and provides a striking example of cognitive complexity in a miniature brain. We have used computational modelling to bridge the gap from behaviour to neural mechansims by relating the computational requirements of navigational tasks to the type of computation offered by invertebrate brain circuits.

We have shown that visual memory of multiple views could be acquired by associative learning in the mushroom body neuropil, and allow insects to recapitulate long routes. We have also proposed a circuit in the central complex neuropil that integrates sky compass and optic flow information on an outbound path and can thus steer the animal directly home; moreover this circuit can be used for additional vector calculations such as finding novel shortcuts. The models are strongly constrained by neuroanatomy, and are tested in realistic agent and robot simulations.

16:30 – 18:30
Deep Learning Theory: Part 1
Day1_PM2_Rm1
Room: Arena 1B
Session Chair: Jacob C Piland

16:30 ***The Effect of Training Data Quantity on Monte Carlo Dropout Uncertainty Quantification in Deep Learning***
Harrison J Cusack (University of Queensland, Australia); Alina N Bialkowski (The University of Queensland, Australia)

16:50 ***Non-Generative Energy Based Models***
Jacob C Piland, Christopher Sweet, Priscila Saboia, Charles Vardeman and Adam Czajka (University of Notre Dame Du Lac, USA)

17:10 ***Flexible Online Representation Learning Based on Similarity Matching***
Shagesh Sridharan (Rutgers University, USA); Yanis Bahroun (Flatiron Institute, USA); Anirvan M. Sengupta (Rutgers University, USA)

17:30 ***Just a Matter of Scale? Reevaluating Scale Equivariance in Convolutional Neural Networks***
Thomas Altstidl, An Nguyen, Leo Schwinn and Franz Köferl (Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany); Christopher Mutschler (Fraunhofer IIS, Germany); Bjoern M Eskofier and Dario Zanca (Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)

17:50 ***Analyzing the Accuracy, Representations, and Explainability of Various Loss Functions for Deep Learning***
Tenshi Ito, Hiroki Adachi, Tsubasa Hirakawa, Takayoshi Yamashita and Hironobu Fujiyoshi (Chubu University, Japan)

18:10 ***Out-Of-Distribution Detection in Deep Learning Models: A Feature Space-Based Approach***
Thiago Medeiros Carvalho (Pontifical Catholic University of Rio de Janeiro - PUC-Rio, Brazil); Marley Vellasco (Pontifícia Universidade Católica do Rio de Janeiro, Brazil); José Franco M Amaral (Universidade do Estado do Rio de Janeiro, Brazil)

16:30 – 18:30
Forecasting Using Neural Networks: Part 2
Day1_PM2_Rm2
Room: Arena 1A
Session Chair: Apurva Narayan

16:30 ***Enhanced Deep Learning Satellite-Based Model for Yield Forecasting and Quality Assurance Using Metamorphic Testing***
Islam Nasr, Lobna Nassar and Fakhri Karray (University of Waterloo, Canada)

16:50 ***Koopformer: Robust Multivariate Long-Term Prediction via Mixed Koopman Neural Operator and Spatial-Temporal Transformer***
Hui Wang and Liping Wang (Zhejiang University of Technology, China); Qicang Qiu (Zhejiang University, China); Hao Jin, Yuyan Gao, Yanjie Lu, Haisen Wang and Wei Wu (Zhejiang University of Technology, China)

17:10 ***Predicting Visually-Modulated Precisely-Timed Spikes Across a Coordinated and Comprehensive Motor Program***
Usama Bin Sikandar, Hannah Choi and Joy Putney (Georgia Institute of Technology, USA); Hengye Yang and Silvia Ferrari (Cornell University, USA); Simon Sponberg (Georgia Institute of Technology, USA)

17:30 ***A New Time Series Framework for Forest Fire Risk Forecasting and Classification***
Bruna Zamith Santos (Federal University of São Carlos (UFSCar) & Amazon, Brazil); Balbina Maria Araujo Soriano and Marcelo Gonçalves Narciso (Embrapa, Brazil); Ricardo Cerri (Universidade Federal de São Carlos, Brazil); Diego F Silva (Universidade de São Paulo, Brazil)

17:50 ***Dual-Channel Spatio-Temporal Wavelet Transform Graph Neural Network for Traffic Forecasting***
Baowen Xu, Xuelei Wang, Zhenjie Liu and Liwen Kang (Institute of Automation, Chinese Academy of Sciences, China)

18:10 ***Segformer: Segment-Based Transformer with Decomposition for Long-Term Series Forecasting***
Jinhua Chen, Jin Fan, Zhen Liu and Jiaqian Xiang (Hangzhou Dianzi University, China); Jia Wu (Macquarie University, Australia)

16:30 – 18:30
Neural Networks for Image Classification: Part 2
Day1_PM2_Rm3
Room: Foyer E
Session Chair: Yongli Sun and Peisen Tang

16:30 ***AutoDes: Few-Shot Named Entity Recognition with Class Descriptions***
Lu Ting, Yichun Hu and Guohua Liu (Donghua University, China); Qiubo Huang (School of Computer Science and Technology, China); Wenjing Guo and Shan Chang (Donghua University, China)

16:50 ***Efficient Gait Recognition via Spatial-Temporal Decoupled Network***
Peisen Tang, Han Su, Ruixuan Gao and Wensheng Zhao (Sichuan Normal University, China); Chaoying Tang (Nanjing University of Aeronautics and Astronautics, China)

17:10 ***A Multimodal Hierarchical Variational Autoencoder for Saliency Detection***
Zhengyang Yu (Australian National University, Australia); Jing Zhang (The Australian National University, Australia); Nick Barnes (Australian National University, Australia)

17:30 ***Multi-Task_Collaborative_Attention_Network_for_Pedestrian_Attribute_Recognition***
Junliang Cao (Xi'an Fiberhome Software Tech, China); Hua Wei (China); Yongli Sun (& Xi'an Fiberhome Software Tech, China); Zhifeng Zhao and Wei Wang (Xi'an Fiberhome Software Tech, China); Guangze Sun (Fiber home, China); Gang Wang (Fiberhome, China)

17:50 ***Zero-Shot Chinese Character Recognition with Stroke- and Radical-Level Decompositions***
Jinshan Zeng, Ruiying Xu, Yu Wu, Hongwei Li and Jiaxing Lu (Jiangxi Normal University, China)

16:30 – 18:30
Sentiment Analysis Using Neural Networks
Day1_PM2_Rm4
Room: Central Room B
Session Chair: Rinor Cakaj

16:30 ***Boosting Aspect Sentiment Quad Prediction by Data Augmentation and Self-Training***
Yongxin Yu and Minyi Zhao (Fudan University, China); Shuigeng Zhou (Fudan University, Shanghai, China)

16:50 ***Token-Level Momentum Contrastive Learning for Multimodal Aspect-Based Sentiment Analysis***
Xiang Luo, Jin Wang and Xuejie Zhang (Yunnan University, China)

17:10 ***Boundary Grid Tagging Scheme with Supervised Contrastive Learning for Aspect-Level Sentiment Triplet Extraction***
Guangmin Zheng and Jin Wang (Yunnan University, China); Xuejie Zhang (High Performance Computing Center of Yunnan University, China)

17:30 ***An Efficient Method Based on Multi-View Semantic Alignment for Cross-View Geo-Localization***
Wang YiFeng, Xia Yamei, Tianbo Lu, Xiaoyan Zhang and Wenbin Yao (Beijing University of Posts and Telecommunications, China)

17:50 ***A Graph-Based Context Learning Technique for Image Parsing***
Basim Azam and Brijesh Verma (Griffith University, Australia)

18:10 ***Document-Level Relation Extraction from Macro-Micro Perspective***
Chun Liao (University of Chinese Academy of Sciences & Institute of Information Engineering, China); Xin Wen and Jiapeng Zhao (Beijing University of Posts and Telecommunications, China); Yanyan Yang (Public Security University of China, China); Jinqiao Shi (Beijing University of Posts and Telecommunications, China)

16:30 – 18:30
Neural Networks in Robotics
Day1_PM2_Rm5
Room: Central Room C
Session Chair: Paolo Arena and Yuichiro Toda

16:30 ***Growing Neural Gas Based Traversability Clustering for an Autonomous Robot***
Koki Ozasa, Yuichiro Toda and Takayuki Matsuno (Okayama University, Japan)

16:50 ***Black-Box Identification with Static Neural Networks of Nonlinearities of an Elastomer-Based Elastic Joint Manipulator***
Antonio Weiller Corrêa do Lago and Isabel Giron Camerini (Pontifícia Universidade Católica Do Rio de Janeiro (PUC-Rio), Brazil); Lucas Castro Sousa, Daniel Henrique Braz de Sousa and Felipe Rebelo Lopes (Pontifícia Universidade Católica Do Rio de Janeiro, Brazil); Marco Meggiolaro (PUC-Rio, Brazil); Helon Vicente Hultmann Ayala (Pontifical Catholic University of Rio de Janeiro, Brazil)

17:10 ***MA-YOLO: Multi-Scale Information Prediction Network Based on the Multi-Direction Weighted Pyramid for UAV Scene***
Congcong Wang, Xiumei Wei and Xuesong Jiang (Qilu University of Technology, China)

17:30 ***A Biologically-Inspired Locally-Connected Spiking Network for Efficient and Robust Ground Reaction Force Estimation in a Legged Robot***
Paolo Arena (Università Degli Studi Di Catania, Italy); Maria Francesca Pia Cusimano (University of Catania, Italy); Alessia Li Noce (Università Degli Studi Di Catania, Italy); Lorenzo Emmanuele Meli (University of Catania, Italy); Salvatore Taffara (Università Degli Studi Di Catania, Italy); Luca Patanè (University of Messina, Italy); Poramate Manoonpong (University of Southern Denmark, Denmark)

17:50 ***Learning Superior Cooperative Policy in Adversarial Multi-Team Reinforcement Learning***
Qingxu Fu (Institute of Automation & University of Chinese Academy of Sciences, China); Tenghai Qiu (Chinese Academy of Sciences, China); Zhiqiang Pu (Institute of Automation Chinese Academy of Sciences, China); Jianqiang Yi (Institute of Automation, Chinese Academy of Sciences, China); Xiaolin Ai (Institute of Automation Chinese Academy of Sciences Beijing, China); Wanmai Yuan (Information Science Academy of CETC, China)

18:10 ***NeuronsMAE: A Novel Multi-Agent Reinforcement Learning Environment for Cooperative and Competitive Multi-Robot Tasks***
Guangzheng Hu (University of Chinese Academy of Sciences, China); Haoran Li (Chinese Academy of Sciences, Institute of Automation, China); Liu Shasha (University of Chinese Academy of Sciences, China); Yuanheng Zhu (Chinese Academy of Sciences, Institute of Automation, China); Dongbin Zhao

(Chinese Academy of Sciences, China)

16:30 – 18:30
Semantic Cognition and Language
Day1_PM2_Rm6
Room: Room 5
Session Chair: Gaurav Gupta

16:30 ***Hierarchical Aware Relation Extraction Based on Prompt-Tuning***
Chun Liao (University of Chinese Academy of Sciences & Institute of Information Engineering, China); Jiawei Zhu (National Computer Network Emergency Response Technical Team Coordination Center, China); Xuebin Wang (Institute of Information Engineering, Chinese Academy of Sciences, China); Yanqiu Wang (Beijing Institute of Network Data, China); Haoliang Zhang (Institute of Information Engineering, Chinese Academy of Sciences, China); Jinqiao Shi (Beijing University of Posts and Telecommunications, China)

16:50 ***Data Augmentation via Back-Translation for Aspect Term Extraction***
Qingting Xu, Yu Hong, Jiaxiang Chen, Jianmin Yao and Guodong Zhou (Soochow University, China)

17:10 ***Coreference-Aware Double-Channel Attention Network for Multi-Party Dialogue Reading Comprehension***
Yanling Li (Soochow University, China); Bowei Zou (Institute for Infocomm Research, Singapore); Yifan Fan, Mengxing Dong and Yu Hong (Soochow University, China)

17:30 ***Handling Chinese OOV with a Combination of Radical-Based Sub-Words and Glyph Features***
Yifan Xu and Yohei Seki (University of Tsukuba, Japan)

17:50 ***Zero-Shot Text Classification with Semantically Extended Textual Entailment***
Tengfei Liu (Beijing, China); Yongli Hu, Puman Chen, Yanfeng Sun and Baocai Yin (Beijing University of Technology, China)

18:10 ***Enhanced Named Entity Recognition Through Joint Dependency Parsing***
Peng Wang (Tianjin University, China); Zhe Wang (Griffith University, Australia); Xiaowang Zhang (Tianjin University, China); Kewen Wang (Griffith University, Australia); Zhiyong Feng (Tianjin University, China)

16:30 – 18:30
Graph Matching with Neural Networks
Day1_PM2_Rm7
Room: Room 6
Session Chair: Junbin Gao

16:30 ***10X Faster Subgraph Matching: Dual Matching Networks with Interleaved Diffusion Attention***
Thanh Toan Nguyen (Griffith University, Australia); Quang-Duc Nguyen (Ho Chi Minh City University of Technology, Vietnam); Zhao Ren (Leibniz University Hannover, Germany); Jun Jo, Quoc Viet Hung Nguyen and Thanh Tam Nguyen (Griffith University, Australia)

16:50 ***TPGNN: Learning High-Order Information in Dynamic Graphs via Temporal Propagation***
Zehong Wang (University of Leeds, United Kingdom (Great Britain)); Qi Li and Donghua Yu (Shaoxing University, China)

17:10 ***Enhanced Loss Function Based on Laplacian Eigenmaps for Graph Classification***
Ye Xiao (The University of Sydney, Australia); Ruikun Li (The University of Sydney & Bussiness School, Australia); Andrey Vasnev and Junbin Gao (The University of Sydney, Australia)

17:30 ***Towards Inference of Original Graph Data Information from Graph Embeddings***
Xinyang Li (Chongqing University, China); Xinyu Lei (Michigan Technological University, USA); Yantao Li (Chongqing University, China); Huafeng Qin (Chongqing Technology and Business University, China); Yiwen Hu (Michigan State University, USA)

17:50 ***A Sequence Tagging Based Framework for Few-Shot Relation Extraction***
Xukun Luo and Ping Wang (Peking University, China)

16:30 – 18:30
Special Session: Machine Learning and Deep Learning Methods applied to Vision and Robotics (MLDLMVR): Part 3
Day1_PM2_Rm8
Room: Room 7
Session Chairs: José García-Rodríguez and Alexandra Psarrou

16:30 ***Object View Prediction with Aleatoric Uncertainty for Robotic Grasping***
Constanze Schwan and Wolfram Schenck (Bielefeld University of Applied Sciences, Germany)

16:50 ***A Semantic-Oriented Pipeline for 3D Reconstruction of Vehicles in Urban Scenes***
Matteo Frosi, Matteo Bellusci, Marco Amoruso and Matteo Matteucci (Politecnico di Milano, Italy)

17:10 ***DeepReversion: Reversely Inferring the Original Face from the DeepFake Face***
Jiaxin Ai, Wang, Baojin Huang and Zhen Han (Wuhan University, China)

17:30 ***Best Fit Activation Functions for Attention Mechanism: Comparison and Enhancement***
Abdulrahman Altahhan and Maan Alhazmi (University of Leeds, United Kingdom (Great Britain))

17:50 ***CA-SSD: Channel-Independent Rare Class Attention for 3D Object Detection***
Jiahao Liu (SouthWest University, China); Guoqiang Xiao (Southwest University, China); Huixian Chen (SouthWest University, China); Xian-Feng Han (Southwest University, China)

18:10 ***IFA-Net: Isomerous Feature-Aware Network for Single-View 3D Reconstruction***
Zecheng Zhang, Xian-Feng Han and Guoqiang Xiao (Southwest University, China)

16:30 – 18:30
Special Session: Deep Edge Intelligence
Day1_PM2_Rm9
Room: Room 8
Session Chairs: Hai Dong and Amit Trivedi

16:30 ***TinyReptile: TinyML with Federated Meta-Learning***
Haoyu Ren (Technical University of Munich & Siemens AG, Germany); Darko Anicic (Siemens AG, Germany); Thomas A. Runkler (Siemens AG & Corporate Technology, Germany)

16:50 ***Semi-Supervised Campus Network Intrusion Detection Based on Knowledge Distillation***
Junjun Chen, Qiang Guo, Zhongnan Fu, Qun Shang and Hao Ma (Peking University, China); Nai Wang (Deakin University, Australia)

17:10 ***Towards Fairer and More Efficient Federated Learning via Multidimensional Personalized Edge Models***
Yingchun Wang (Xi'an Jiaotong University, China & The Hong Kong Polytechnic University, China); Jingcai Guo, Jie Zhang and Song Guo (The Hong Kong Polytechnic University, Hong Kong); Weizhan Zhang and Qinghua Zheng (Xi'an Jiaotong University, China)

17:30 ***SwiftTron: An Efficient Hardware Accelerator for Quantized Transformers***
Alberto Marchisio (TU Wien, Austria); Davide Dura, Maurizio Capra, Maurizio Martina and Guido Masera (Politecnico di Torino, Italy); Muhammad Shafique (NYU Abu Dhabi, United Arab Emirates)

17:50 ***FastCaps: A Design Methodology for Accelerating Capsule Network on Field Programmable Gate Arrays***
Abdul Rahoof (IIT Palakkad); Vivek Chaturvedi (IIT Palakkad, India); Muhammad Shafique (NYU Abu Dhabi, United Arab Emirates)

18:10 ***SigD: A Cross-Session Dataset for PPG-Based User Authentication in Different Demographic Groups***
Lin Li (Swinburne University of Technology, Australia); Chao Chen (RMIT University, Australia); Lei Pan (Deakin University, Australia); Jun Zhang and Yang Xiang (Swinburne University of Technology, Australia)

16:30 – 18:30
Virtual: Recommender Systems with Neural Networks: Part 1
Day1_PM2_RmV1
Room: Virtual Room 1
Session Chair: Meng Liu and Ao Liu

16:30 ***Sequential Recommendation with Latent Relation Information***
Zhang Jiongmin, Ao Liu, Xing Yang and Ying Qian (East China Normal University, China)

16:50 ***Time Series Enhanced Graph Neural Networks for Session-Based Recommendation***
Xiaobing Li and Yan Tang (Southwest University, China)

17:10 ***Cross-Domain Deep Collaborative Filtering Without Overlapping Data***
Meng Liu, Jianjun Li, Guohui Li, Zhiqiang Guo, Chaoyang Wang and Peng Pan (Huazhong University of Science and Technology, China)

17:30 ***Exploiting User Preference in GNN-Based Social Recommendation with Contrastive Learning***
Xiufang Liang, Yingzheng Zhu, Huajuan Duan and Fuyong Xu (Shandong Normal University, China); Pei-Yu Liu (Shangdong Normal University, China); Ran Lu (Shandong Normal University, China)

17:50 ***CGCCMR: An Enhanced Multi-Gate Model for Cross-Market Recommendation***
Jinyu Mo (Chongqing University, China); Hong Xie (Chongqing Institute of Green and Intelligent Technology, Chinese Academy of Sciences, China); Xiaoyu Shi (Chinese Academy of Sciences & Chongqing Institute of Green and Intelligent Technology, China); Mingsheng Shang (Chinese Academy of Sciences, China)

18:10 ***ReGRL: An Informative Graph Representation via Hierarchical Recursive Learning for Legal Case Recommendation***
Xueyuan Chen, Xiao Wei, Hang Yu and Luo Xiangfeng (Shanghai University, China)

16:30 – 18:30
Virtual: Classifiers: Part 1
Day1_PM2_RmV2
Room: Virtual Room 2
Session Chair: Rohit Raj

16:30 ***Towards Robustness of Few-Shot Text Classifiers***
Rohit Raj (Indian Institute of Science, India); V. Susheela Devi (IISc, India)

16:50 ***A General Heterogeneous Hypergraph Neural Network for Node Classification***
Bingde Hu (Zhejiang University, China); Wenjie Huang (Zhejiang University & Yuquan Campus, China); Tongya Zheng and Mingli Song (Zhejiang University, China); Ying Li (Bsfit, China)

17:10 ***A Two-Layer BiLSTM Model with Linear Gating for Chinese Named Entity Recognition***
Hongzhen Cui, Longhao Zhang, Wen Wu and Yunfeng Peng (University of Science and Technology Beijing, China)

17:30 ***BSDGAN: Balancing Sensor Data Generative Adversarial Networks for Human Activity Recognition***
Yifan Hu (China)

17:50 ***Speech Emotion Recognition Using Dual Global Context Attention and Time-Frequency Features***
Peng Zhang, Xuheng Bai, Jing Zhao and Yan Liang (Qilu University of Technology, China); Fuqiang Wang (Shandong Computer Science Center, China); Xiaoming Wu (Qilu University of Technology, China)

18:10 ***Unified Named Entity Recognition as Multi-Label Sequence Generation***
Hong Yu and Jindian Su (South China University of Technology, China)

16:30 – 18:30
Virtual: Neural Networks for Fault and Fraud Detection
Day1_PM2_RmV3
Room: Virtual Room 3
Session Chair: Jianping Yao and Sadhana Tiwari

16:30 ***Predicting Habitable Exoplanets in Different Star-Systems Using Deep Learning Based Anomaly Detection Approach***
Yash Patel and Sadhana Tiwari (Indian Institute of Information Technology Allahabad, India); Sanjay Kumar Sonbhadra (Siksha O Anusandhan Bhubaneswar India, India); Sonali Agarwal (Indian Institute of Information Technology, Allahabad, India)

16:50 ***Autoencoder-Based Anomaly Detection in Streaming Data with Incremental Learning and Concept Drift Adaptation***
Jin Li, Kleanthis Malialis and Marios Polycarpou (University of Cyprus, Cyprus)

17:10 ***DCP-Net: The Defect Detection Method of Industrial Product Based on Dual Collaborative Paths***
Zekai Zhang and Mingle Zhou (Qilu University of Technology & Shandong Computer Science Center, China); Honglin Wan (Shandong Normal University, China); Min Li (Qilu University of Technology, China); Gang Li (Qilu University of Technology & Shandong Computer Science Center, China)

17:30 ***Multi-Output Deep-Supervised Classifier Chains for Plant Pathology***
Jianping Yao and Son N Tran (The University of Tasmania, Australia)

17:50 ***Lightweight Ghost Dense Network for Tomato Leaf Disease Identification***
Yinan Wang and Zhijun Xie (Ningbo University, China); Libo Zhuang (Ningbo Shixin Agro-Ecology Company, China); Kewei Chen (Ningbo University, China); Yuntao Xie (The University of New South Wales, Australia)

18:10 ***CCFD-GAN: Credit Card Fraud Detection Based on Generative Adversarial Networks Enhanced by Penalty Mechanism***
Wenbo Zhang, Shuo Zhang and Jinyi Chen (Harbin Institute of Technology, Shenzhen, China); Hejiao Huang (Harbin Institute of Technology Shenzhen Graduate School, China)

16:30 – 18:30
Virtual: Event Extraction and Action Recognition
Day1_PM2_RmV4
Room: Virtual Room 4
Session Chair: Yan Yang

16:30 ***Self-Adaptive Prompt-Tuning for Event Extraction in Ancient Chinese Literature***
Jingyi Zhang and Yuting Wei (Bejing University of Posts and Telecommunications, China); Yangfu Zhu (Beijing University of Posts and Telecommunications, China); Bin Wu (Beijing University of Post and Telecommunications, China)

16:50 ***A Trigger-Free Method Enhanced by Coreference Information for Document-Level Event Extraction***
Fumin Chen, Xu Wang, Xiaohui Liu and Dezhong Peng (Sichuan University, China)

17:10 ***Heterogeneous Graph Interaction Based Event Extraction with Attentional Position Embeddings***
Xin Guo, Xuejing Wang, Qian Chen, Suge Wang, Jianxin Zheng, Jian Liao and Hui Liu (Shanxi University, China)

17:30 ***Action Reinforcement and Indication Module for Single-Frame Temporal Action Localization***
Zikang Yu, Cheng Cheng, Wujun Wen, Lin Feng and Wenxuan Guo (Dalian University of Technology, China)

17:50 ***Video-Based Driver Action Recognition via Spatial-Temporal and Motion Deep Learning***
Fangzhi Ma, Guanyu Xing and Yanli Liu (Sichuan University, China)

18:10 ***Few-Shot Action Recognition with A Transductive Maximum Margin Classifier***
Fei Pan, Jie Guo and Yanwen Guo (Nanjing University, China)

18:30 – 19:30
Poster Session 1
Day1_Posters
Room: Hall 1
Session Chairs: Marcus Gallagher

#1: End to End Sign Language Translation via Multitask Learning
Dibyanayan Bandyopadhyay and Aizan Zafar (Indian Institute of Technology Patna, India); Mohammed Hasanuzzaman (Munster Technological University, Ireland); Asif Ekbal (IIT Patna, India)

#2: MTCD-Model: A Two-Layer Model for Malicious Traffic Classification and Detection Based on Hierarchical Feature Learning
Ziang Li (Chinese Academy of Sciences & University of Chinese Academy of Sciences, China); Zhenyu Cheng and Zang Tianning (Institute of Information Engineering, Chinese Academy of Sciences, China); Yijie Li (Individual, China)

#3: DRSU-Net: Depth-Residual Separable U-Net Model for Semantic Segmentation
Mohamed Arbane (Laboratoire de Recherche Lissi, Universite Paris Est Creteil (UPEC), France); Mohamed Essaid Khanouche (LISSI Laboratory, France); Ghazaleh Khodabandelou (University of Paris-Est Créteil, France); Chibani Abdelghani (UPEC University, France); Yacine Amirat (LISSI Laboratory, France)

#4: Detect Overlapping Community via Graph Neural Network and Topological Potential
Xiaohong Li, Qixuan Peng and Ruihong Li (NorthWest Normal University, China); Huifang Ma (Northwest Normal University, China)

#5: Comparison of Two Classification Methods Trained with FD-FLIM Data to Identify and Distinguish Plastics from Environmental Materials
Maximilian Wohlschläger and Nina Leiter (Technical University of Applied Sciences Rosenheim, Germany); Maximilian Dietlmeier (University of Applied Science Rosenheim, Germany); Martin G.J. Löder (University Bayreuth, Germany); Martin Versen (Technical University of Applied Sciences Rosenheim, Germany); Christian Laforsch (University Bayreuth, Germany)

#6: Conditional Human Activity Signal Generation and Generative Classification with a GPT-2 Model
Hazar Zilelioglu (University of Paris-Est Creteil, France); Ghazaleh Khodabandelou (University of Paris-Est Créteil, France); Chibani Abdelghani (UPEC University, France); Yacine Amirat (LISSI Laboratory, France)

#7: Graph Convolutional Networks Based Standard Essential Patents Identification
Weidong Liu, Rui Li and Wei Tang (Inner Mongolia University, China)

#8: Double Granularity Graph Network for Chinese Legal Question Answering
TianYuan Zhang (ChongQing University, China); Yuming Wang (Huazhong University of Science and Technology, China); Jingpei Dan (Chongqing University, China)

#9: Latent Neural Phase Model for Synchronization Analysis
Masahiro Kohjima (NTT Corporation, Japan)

#10: cAPTured: Neural Reflex Arc-Inspired Fuzzy Continual Learning for Capturing in Silico Aptamer-Target Protein Interactions
Aviral Chharia (Carnegie Mellon University, USA); Runjhun Saran (University of Waterloo, Canada); Apurva Narayan (Western University, Canada & University of Waterloo, Canada)

#11: Revisiting Data Augmentation in Model Compression: An Empirical and Comprehensive Study
Muzhou Yu (Xi'an Jiaotong University, China); Linfeng Zhang (Tsinghua University & DIDI Global, China); Kaisheng Ma (Tsinghua University & PolarBear, China)

#12: Deep Learning Strategies for Rare Drug Mechanism of Action Prediction
Gonçalo A Ferreira, Marco Teixeira and Raquel M Belo (University of Porto, Portugal); Jaime Cardoso and Wilson Silva (Faculty of Engineering, University of Porto & INESC TEC, Portugal)

#13: Verification-Friendly Networks: The Case for Parametric ReLUs
Patrick Henriksen (Imperial College London & Safe Intelligence, United Kingdom (Great Britain)); Francesco Leofante and Alessio Lomuscio (Imperial College London, United Kingdom (Great Britain))

#14: Feature Attribution Explanation to Detect Harmful Dataset Shift
Ziming Wang, Changwu Huang and Xin Yao (Southern University of Science and Technology, China)

#15: Quantization Modes for Neural Network Inference: ASIC Implementation Trade-Offs
Nathan Bain (TIMA & STMicroelectronics, France); Roberto Guizzetti, Emilien Taly, Ali Oudrhiri and Bruno Paille (STMicroelectronics, France); Pascal Urard (ST Microelectronics, France); Frédéric Pétrot (Université Grenoble Alpes, France)

#16: FAQ: Mitigating the Impact of Faults in the Weight Memory of DNN Accelerators Through Fault-Aware Quantization
Muhammad Abdullah Hanif (New York University Abu Dhabi, United Arab Emirates); Muhammad Shafique (NYU Abu Dhabi, United Arab Emirates)

#17: SAGE: Semantic-Aware Global Explanations for Named Entity Recognition
Andrea Zugarini (Expert.ai & University of Siena, Italy); Leonardo Rigutini (Expert.ai, Italy)

#18: Arithmetical Evaluation System Based on Improved-YOLOv5 and CRNN Networks
Xinyu Zhao (Nanjing University of Posts and Telecommunications, China); Tianliang Liu (Nanjing University of Posts and Telecommunications & Jiangsu Provincial Key Lab of Image Processing and Image Communication, China); Yujie Chang (Nanjing University of Posts and Telecommunications, China)

#19: LpAdvGAN: Noise Optimization Based Adversarial Network Generation Adversarial Example
Yang Delong and Jing Liu (Inner Mongolia University, China)

#20: Ed-Fed: A Generic Federated Learning Framework with Resource-Aware Client Selection for Edge Devices
Zitha Sasindran, Harsha Yelchuri and Prabhakar Venkata T. (Indian Institute of Science, India)

#21: Boosting Collision Perception Against Noisy Signals with a Probabilistic Neural Network
Jialan Hong, Qinbing Fu, Xuelong Sun, Haiyang Li and Jigen Peng (Guangzhou University, China)

#22: Insty-GAN for Image-To-Image Location Transfer
Sanbi Luo (Institute of Information Engineering, Chinese Academy of Sciences, Beijing & School of Cyber Security, University of Chinese Academy of Sciences, Beijing, China)

#23: High-Level Classification for EEG Analysis
Murillo G. Carneiro (Federal University of Uberlândia, Brazil); Camila Ramos (Universidade Federal de Uberlândia, Brazil); Joao-Batista Destro-Filho (Federal University of Uberlandia (UFU), Brazil); Yu-tao Zhu (China Branch of BRICS Institute of Future Networks, China); Donghong Ji (Wuhan University, China); Liang Zhao (University of Sao Paulo, Brazil)

#24: LU-Net: Invertible Neural Networks Based on Matrix Factorization
Sarina Penquitt (University of Wuppertal, Germany); Robin Chan (Bielefeld University, Germany); Hanno Gottschalk (University of Wuppertal, Germany)

#25: The Third Common Interface for Graph Neural Networks
Yuta Yajima, Jun Kato and Akihiro Inokuchi (Kwansei Gakuin University, Japan)

#26: Fair_FM: An Improved Functional Mechanism to Provide Better Privacy Protection and Fairness Guarantee
Zuotian Han, Yukun Yan and Qilong Han (Harbin Engineering University, China)

#27: Imperceptible Adversarial Attack on S Channel of HSV Colorspace
Tong Zhu (Anhui University, China); Zhaoxia Yin (East China Normal University, China); Bin Luo, Jiefei Zhang and Wanli Lyu (Anhui University, China)

#28: Estimating Market Value of Companies Based on Finance Statement Through Data Fusion
Ning Li, Shiqi Jiang, Yaxuan Zheng and Wenli Xiong (East China Normal University, China); Shaohua Li and Yanpeng Hu (Shanghai Chinafortune Company Limited, China); Changbo Wang and Chenhui Li (East China Normal University, China)

#29: Towards Better Word Importance Ranking in Textual Adversarial Attacks
Jiahui Shi and Li Linjing (Institute of Automation, Chinese Academy of Sciences, China); Daniel Dajun Zeng (Institute of Automation, Chinese Academy of Sciences & School of Artificial Intelligence, University of Chinese Academy of Sciences, China)

#30: Adaptive Linear Regression for Data Stream
Aldo Marcelo Paim (Pontifical Catholic University of Parana, Brazil); Fabrício Enembreck (Pontifical Catholic University of Paraná, Brazil)

#31: Interpretable Diversity Analysis: Visualizing Feature Representations in Low-Cost Ensembles
Tim Whitaker and Darrell Whitley (Colorado State University, USA)

#32: SCS-VAE: Generate Style Headlines via Novel Disentanglement
Zhaoqian Zhu, Xiang Lin, Gongshen Liu, Bo Su and Tianhe Lu (Shanghai Jiao Tong University, China)

#33: An Enhanced Transferable Adversarial Attack Against Object Detection
GuoQiang Shi, Zhi Lin and Anjie Peng (Southwest University of Science and Technology, China); Hui Zeng (Sun Yat-sen University, China)

#34: A Novel Control-Variates Approach for Performative Gradient-Based Learners with Missing Data
Xing Han (University of Texas at Austin, USA); Jing Hu (Intuit, USA); Joydeep Ghosh (University of Texas at Austin, USA)

#35: Two Kinds of Adaptation Model for General Perceptual Dynamics in Binocular Rivalry
Hirotsugu Goto, Tomokazu Urakawa, Keisuke Shioya and Osamu Araki (Tokyo University of Science, Japan)

#36: A Spiking Neural Network Learning Markov Chain
Mikhail Kiselev and Alexander Ivanitsky (Chuvash State University, Russia); Andrey Lavrentyev (Kaspersky, Russia)

#37: A Brain-Inspired Fully Hardware Hopfield Neural Network Based on Memristive Arrays
Zilu Wang and Xin Yao (Southern University of Science and Technology, China)

#38: UMLP - IFOCS: Using Multi - Layer Perceptron for Intelligent Field Oriented Control System
Long Yingjie (South China Normal University, China); Hu Yingbiao (Nanjing University of Science and Technology, China); Zhang Leyi (Guangdong University of Technology & School of Automation, China); Li Huinian (Macau University of Science and Technology, China)

#39: Bandit-NAS: Bandit Sampling Method for Neural Architecture Search
Yiqi Lin (China); Ru Wang (Singapore)

#40: Time-Series Anonymization of Tabular Health Data Using Generative Adversarial Network
Atiye Sadat Hashemi, Kobra Etminani, Amira Soliman, Omar Hamed and Jens Lundström (Halmstad University, Sweden)

#41: Enhancing Once-For-All: A Study on Parallel Blocks, Skip Connections and Early Exit
Simone Sarti, Eugenio Lomurno, Andrea Falanti and Matteo Matteucci (Politecnico di Milano, Italy)

#42: Semi-Supervised GAN with Sparse Ground Truth as Boundary Conditions
Matthieu E. Dabrowski (CRISTAL Laboratory - FOX Team, France); José Mennesson (IMT Nord-Europe - CERI DIGITAL SYSTEMS, France & CRIStAL Laboratory, France); Jérôme Riedi (University of Lille, France); Chaabane Djeraba (CRISTAL Laboratory - FOX Team, France)

#43: Hidden Design Principles in Zero-Cost Performance Predictors for Neural Architecture Search
André Silva (Sidia Instituto de Ciência e Tecnologia, Brazil); Lucas Marcondes Pavelski (Sidia, Brazil); Luiz Cordovil (Sidia R&D Institute, Brazil)

#44: Deep Inversion Method for Attacking Lifelong Learning Neural Networks
Boyuan Du and Yu Yuanlong (Fuzhou University, China); Huaping Liu (Tsinghua University, China)

#45: Neural Linguistic Steganography with Controllable Security
Tianhe Lu and Gongshen Liu (Shanghai Jiao Tong University, China); Ru Zhang (BUPT, China); Tianjie Ju (Shanghai Jiao Tong University, China)

#46: Least Redundant Gated Recurrent Neural Network
Łukasz Neumann and Łukasz Lepak (Warsaw University of Technology, Poland); Paweł Wawrzyński (Ideas NCBR, Poland)

#47: Improving Robustness Against Adversarial Attacks with Deeply Quantized Neural Networks
Ferheen Ayaz (University of Sussex, United Kingdom (Great Britain)); Idris Zakariyya, José Cano, Sye Loong Keoh and Jeremy Singer (University of Glasgow, United Kingdom (Great Britain)); Danilo Pietro Pau (STMicroelectronics, Italy); Mounia Kharbouche-Harrari (STMicroelectronics, France)

#48: Optimizing Throughput and Latency of Static 5G Multicast Networks Using Boltzmann Machines
Madhav Vadlamani, Vivek Saraswat and Udayan Ganguly (Indian Institute of Technology Bombay, India)

#49: New Health of Things Approach to Classification and Detection of Brain Tumors Using Transfer Learning for Segmentation in IMR Images
Luis Fabricio de Freitas Souza (UFC, Brazil); Adriell Gomes Marques, Matheus Araujo dos Santos, Lucas de Oliveira, José Jerovane da Costa Nascimento, Julio Macedo Chaves and Pedro Pedrosa Rebouças Filho (IFCE, Brazil)

#50: Deep Learning Models for Multi-Energy Prediction of Combined Electrical, Heat and Gas Network Systems
Corneliu T Arsene and Alessandra Parisio (University of Manchester, United Kingdom (Great Britain))

18:30 – 19:30
Mentor-Mentee Networking Event
Room: Room 5

Tuesday, June, 20, 2023

8:30 - 9:30
Explainable AI Panel
Room: Arena 1B
Session Chair: Asim Roy

Steve Grossberg
Paulo Lisboa
Janet Wiles
Marley Vellasco
Asim Roy

9:30 – 10:00
Coffee Break
Room: Hall 1

10:00 – 12:00
Deep Learning Algorithms: Part 1
Day2_AM_Rm1
Room: Arena 1B
Session Chair: Swarnava Dey and Apurva Narayan

10:00 ***Angle Based Dynamic Learning Rate for Gradient Descent***
Neel Ashok Mishra (International Institute of Information Hyderabad, India); Pawan Kumar (International Institute of Information Technology, Hyderabad, India)

10:20 ***Improving the Transferability of Adversarial Examples with Diverse Gradients***
Yangjie Cao, Haobo Wang, Chenxi Zhu and Yan Zhuang (Zhengzhou University, China); Jie Li (Shanghai Jiaotong University, China); Xianfu Chen (VTT Technical Research Centre of Finland, Finland)

10:40 ***NSA: Naturalistic Support Artifact to Boost Network Confidence***
Abhijith Sharma (University of British Columbia, Canada); Apurva Narayan (Western University, Canada & University of Waterloo, Canada); Phil Munz (TrojAI, Canada)

11:00 ***Gradient Descent Optimizes Normalization-Free ResNets***
Zongpeng Zhang, Zenan Ling, Tong Lin and Zhouchen Lin (Peking University, China)

11:20 ***PST-Net: Point Cloud Completion Network Based on Local Geometric Feature Reuse and Neighboring Recovery with Taylor Approximation***
Yinchu Wang and Haijiang Zhu (Beijing University of Chemical Technology, China); Guanghui Wang (Toronto Metropolitan University, Canada)

11:40 ***DietCNN: Multiplication-Free Inference for Quantized CNNs***
Swarnava Dey (TCS Research & IIT Kharagpur); Pallab Dasgupta (IIT Kharagpur, India); Partha Pratim Chakrabarti (IIT Kharagpur)

10:00 – 12:00
Medical Image Recognition Using Neural Networks: Part 1
Day2_AM_Rm2
Room: Arena 1A
Session Chair: Sarah Alhammad and C Krishna Mohan

10:00 ***DMINet: A Lightweight Dual-Mixed Channel-Independent Network for Cataract Recognition***
Xiao Wu, Yu Chen, Qiuyang Yan, Yuhang Zhao, Jilu Zhao and Xiaoqing Zhang (Southern University of Science and Technology, China); Risa Higashita (Tomey Corporation, Japan); Jiang Liu (Southern University of Science and Technology, China)

10:20 ***Knowing the Unknown: Open-Set Bacteria Classification in Gram Stain Microscopic Images***
Sarah Alhammad (University of Queensland, Australia & Prince Sattam Bin Abdulaziz University, Saudi Arabia); Brian C Lovell (NICTA, Australia)

10:40 ***FLWGAN: Federated Learning with Wasserstein Generative Adversarial Network for Brain Tumor Segmentation***
Peketi Divya, Chalavadi Vishnu and C Krishna Mohan (IIT Hyderabad, India); Yen-Wei Chen (Ritsumeikan University, Japan)

11:00 ***AttResDU-Net: Medical Image Segmentation Using Attention-Based Residual Double U-Net***
Akib M Khan, Alif Ashrafee and Fahim Shahriar Khan (Islamic University of Technology); Md. Bakhtiar Hasan and Md. Hasanul Kabir (Islamic University of Technology, Bangladesh)

11:20 ***Modular and Self-Training for Surgical Image Recognition***
Nosseiba Ben Salem (University of Computer Science, France); Younes Bennani (Univ Paris 13, France)

11:40 ***Modular Self-Supervised Learning for Hand Surgical Diagnosis***
Léo Dechaumet (Deep Knowledge, France); Younes Bennani (Univ Paris 13, France)

10:00 – 12:00
Bioinformatics and Drug Discovery
Day2_AM_Rm3
Room: Foyer E
Session Chair: Ricardo A Rios

10:00 ***Embracing the Dropouts in Single-Cell RNA-Seq Dynamics Modelling***
Mingrong Xiang (Deakin, Australia); Wei Luo and Jingyu Hou (Deakin University, Australia); Wenjing Tao (Southwest University, China)

10:20 ***Predicting Protein Interaction Sites with Geometric Deep Learning***
Gabriel St-Pierre-Lemieux (University of Ottawa, Canada); Eric Paquet (National Research Council & University of Ottawa, Canada); Herna Viktor and Wojtek Mchalowski (University of Ottawa, Canada)

10:40 ***Modeling Protein Activities and Mutations with Graph Neural Networks: Insights into Hemophilia***
Ricardo A Rios (Federal University of Bahia, Brazil & Institute of Computing, Brazil); Tatiane N Rios (Federal University of Bahia, Brazil); Tiago J.S. Lopes (National Center for Child Health and Development Research Institute, Brazil); Marcos V Ferreira (Federal University of Bahia, Brazil)

11:00 ***Subgraph-Oriented Heterogeneous Drug-Target Interaction Identification***
Xiaofeng Zhang, Zeyu Huang, Jun Bai, Wenge Rong, Yuanxin Ouyang and Zhang Xiong (Beihang University, China)

11:20 ***A Novel Clinical Trial Prediction-Based Factual Inconsistency Detection Approach for Medical Text Summarization***
Shuaimin Li and Jungang Xu (University of Chinese Academy of Sciences, China)

10:00 – 12:00
Neural Networks for Cyber Security: Part 1
Day2_AM_Rm4
Room: Central Room B
Session Chairs: Eyad Elyan and Alberto Marchisio

10:00 ***Robust Deep Learning Models Against Semantic-Preserving Adversarial Attack***
Yunce Zhao (University of Technology, Sydney & Southern University of Science and Technology, China); Dashan Gao (Hong Kong University of Science and Technology & Southern University of Science and Technology, China); Yinghua Yao (University of Technology Sydney & Southern University of Science and Technology, China); Zeqi Zhang and Bifei Mao (Huawei, China); Xin Yao (Southern University of Science and Technology, China)

10:20 ***RobCaps: Evaluating the Robustness of Capsule Networks Against Affine Transformations and Adversarial Attacks***
Alberto Marchisio (TU Wien, Austria); Antonio De Marco (Politecnico di Torino, Italy); Alessio Colucci (Technische Universität Wien, Austria); Maurizio Martina (Politecnico di Torino, Italy); Muhammad Shafique (NYU Abu Dhabi, United Arab Emirates)

10:40 ***Improving the Transferability of Adversarial Attacks Through Experienced Precise Nesterov Momentum***
Hao Wu, Jinwei Wang, Jiawei Zhang and Yufeng Wu (Nanjing University of Information Science and Technology, China); Bin Ma (Qilu University of Technology, China); Xiangyang Luo (PLA Strategic Support Force Information Engineering University & Zhengzhou Science and Technology Institute, China)

11:00 ***Unmasking the Imposters: Task-Specific Feature Learning for Face Presentation Attack Detection***
Faseela Abdullakutty, Pamela Johnston and Eyad Elyan (Robert Gordon University, United Kingdom (Great Britain))

11:20 ***On Robustness of Split Neural Networks Against Data Poisoning Attacks***
Mayank Kumar and Abhishek Yadav (Indian Institute of Technology Jammu, India); Priyanka Singh (DAIICT Gandhinagar, India); Shaifu Gupta (Indian Institute of Technology Jammu, India)

11:40 ***CSARUNet: An Attention Mechanism-Based Model for Image Tampering Localization with Ringed Residual Block***
Ying Guo, Shan Jiang and Jin Hong Li (North China University of Technology, China)

10:00 – 12:00
Contrastive Learning
Day2_AM_Rm5
Room: Central Room C
Session Chair: Yawei Zhao and Li Li

10:00 ***CAKT: Coupling Contrastive Learning with Attention Networks for Interpretable Knowledge Tracing***
Shuaishuai Zu and Li Li (Southwest University, China); Jun Shen (University of Wollongong, Australia)

10:20 ***MFGCL: Light Graph Contrast Learning with Multi-Feature Information for Recommendation***
Yijun Zhao, FaJian Jiang and Jinfeng Wang (South China Agricultural University, China)

10:40 ***TextGCL: Graph Contrastive Learning for Transductive Text Classification***
Yawei Zhao (University of Chinese Academy of Science, China); Xiaoyang Song (University of Chinese Academy of Sciences, China)

11:00 ***SynC: A Dense Retrieval Method Based on Syntactical Contrastive Learning***
Hongjin Tao, Jun Zeng, Ziwei Wang and Yu Yang (Chongqing University, China); Xiaolin Hu (National Engineering Laboratory for Industrial Big-Data Application Technology, China)

11:20 ***HSimCSE: Improving Contrastive Learning of Unsupervised Sentence Representation with Adversarial Hard Positives and Dual Hard Negatives***
Bo Xu and Shouang Wei (Donghua University, China); Luyi Cheng (China Mobile Group Shanghai Co., Ltd., China); Shizhou Huang, Hui Song, Ming Du and Hongya Wang (Donghua University, China)

10:00 – 12:00
Medical Data Processing with Neural Networks
Day2_AM_Rm6
Room: Room 5
Session Chair: Junbin Gao

10:00 ***Worldwide COVID-19 Topic Knowledge Graph Analysis from Social Media***
Yuchen Zhang (Macquarie University, Australia & School of Information Management, Wuhan University, China); Yifan Wang, Hao Fan and Jing Li (Wuhan University, China); Jia Wu (Macquarie University, Australia)

10:20 ***Cross-Subject Decision Confidence Estimation from EEG Signals Using Spectral-Spatial-Temporal Adaptive GCN with Domain Adaptation***
Rongfei Gu, Rui Li, Wei-Long Zheng and Bao-Liang Lu (Shanghai Jiao Tong University, China)

10:40 ***PT3: A Transformer-Based Model for Sepsis Death Risk Prediction via Vital Signs Time Series***
Chunping Li (School of Software, China)

11:00 ***Single-Lead to Multi-Lead Electrocardiogram Reconstruction Using a Modified Attention U-Net Framework***
Akshit Garg, Vijay Vignesh Venkataramani and U. Deva Priyakumar (International Institute of Information Technology, Hyderabad, India)

11:20 ***Application of Graph Theoretic Measures for Assessing Efficacy of Stroke Rehabilitation***
Sravanthi Naga Sita Upadrasta (International Institute of Information Technology, Hyderabad, India); Kamalaker Dadi (International Institute of Information Technology Hyderabad, India); P n Sylaja and Rinta Paul (Sree Chitra Tirunal Institute for Medical Sciences and Technology, India); Srijithesh Rajendran (National Institute of Mental Health and Neuro Sciences, India); C. Kesavadas (Sree Chitra Tirunal Institute of Medical Sciences and Technology, Trivandrum, India); Raju Surampudi Bapi (International Institute of Information Technology, India)

11:40 ***Discriminative Domain Adaptation Network for Fine-Grained Disease Severity Classification***
Shijie Wen, Yiqiang Chen, Shuai Guo, Yuan Ma and Yang Gu (Institute of Computing Technology, Chinese Academy of Sciences, China); Piu Chan (Xuanwu Hospital of Capital Medical University, China)

10:00 – 12:00
Unsupervised Learning and Clustering: Part 1
Day2_AM_Rm7
Room: Room 6
Session Chair: Snehasis Banerjee

10:00 ***Unsupervised Feature Vector Clustering Using Temporally Coded Spiking Networks***
Peter G Stratton (Queensland University of Technology, Australia); Tara J Hamilton (University of Technology Sydney, Australia & Cuvos Ltd., Australia); Andrew Wabnitz (Defence Science & Technology Group & Department of Defence, Australia)

10:20 ***An Unsupervised Hierarchical Clustering Approach to Improve Hopfield Retrieval Accuracy***
Matthew Lai (University of Technology Sydney, Australia)

10:40 ***Robust Principal Component Analysis via Truncated L1-2 Minimization***
Ying Huang, Zhi Wang, Qiang Chen and Wu Chen (Southwest University, China)

11:00 ***Fixed Point Laplacian Mapping: A Geometrically Correct Manifold Learning Algorithm***
Dai Shi (Western Sydney University, Australia); Andi Han (University of Sydney, Australia); Yi Guo (Western Sydney University, Australia); Junbin Gao (The University of Sydney, Australia)

11:20 ***An Improved Robust ClusterGAN with the Perturbation Attack***
Jin Zhou (University of Jinan, China)

11:40 ***A Protocol for Testing Conscious Learning Robots***
Juyang Weng (Brain-Mind Institute & GENISAMA LLC, USA)

10:00 – 12:00
Special Session: Neuromorphic Computing for Cloud, Edge and IoT
Day2_AM_Rm8
Room: Room 7
Session Chair: Toshiyuki Yamane and Ryosho Nakane

10:00 ***Low Precision Quantization-Aware Training in Spiking Neural Networks with Differentiable Quantization Function***
Ayan Shymyrbay (King Abdullah University of Science and Technology, Saudi Arabia); Mohammed E. Fouda (University of California-Irvine, USA); Ahmed M. Eltawil (King Abdullah University of Science and Technology, Saudi Arabia)

10:20 ***Reservoir Computing for Symbol Detection of Optical Wireless Scattering Communications***
Haotian Chen, Ryo Natsuaki and Akira Hirose (The University of Tokyo, Japan)

10:40 ***Accelerating SNN Training with Stochastic Parallelizable Spiking Neurons***
Sidi Yaya Arnaud Yarga and Sean U. N. Wood (Université de Sherbrooke, Canada)

11:00 ***Spikemoid: Updated Spike-Based Loss Methods for Classification***
Michael Andrew Jurado, Audrey Dunn and Samuel Shapero (Georgia Institute of Technology, USA)

11:20 ***FPGA Implementation of a Chaotic Boltzmann Machine Annealer***
Kanta Yoshioka (Kyushu Institute of Technology, Japan); Yuichi Katori (Future University Hakodate, Japan); Yuichiro Tanaka, Osamu Nomura, Takashi Morie and Hakaru Tamukoh (Kyushu Institute of Technology, Japan)

11:40 ***Efficient Repetition Coding for Deep Learning Towards Implementation Using Emerging Non-Volatile Memory with Write-Errors***
Ninnart Fuengfusin, Hakaru Tamukoh, Yuichiro Tanaka, Osamu Nomura and Takashi Morie (Kyushu Institute of Technology, Japan)

10:00 – 12:00
Special Session: Deep Learning for Anomaly Detection: Theory, Algorithms, and Applications
Day2_AM_Rm9
Room: Room 8
Session Chairs: Jia Wu and Hao Peng

10:00 ***Efficient Lung Nodule Detection via 3D Deep Learning with Shifted Convolutions***
Xiaohuan Kuang (Wuhan University, China); Kang Yuan (Dianei Technology, China); Bo Du (Wuhan University, China); Jiancheng Yang (EPFL, Switzerland & Dianei Technology, China)

10:20 ***DRepT: Anomaly Detection Based on Transfer of Defect Representation with Transmittance Mask***
Hiroki Kobayashi and Manabu Hashimoto (Chukyo University, Japan)

10:40 ***MultiDrop: A Local Rademacher Complexity-Based Regularization for Multitask Models***
Ziqing Lu (Wuhan University, China); Chang Xu (University of Sydney, Australia); Bo Du (Wuhan University, China)

11:00 ***ConsE: Consistency Exploitation for Semi-Supervised Anomaly Detection in Graphs***
Wenjing Chang (Computer Network Information Center, CAS & University of Chinese Academy of Sciences, China); Jianjun Yu (CNIC, CAS, China); Xiaojun Zhou (Computer Network Information Center, CAS, China)

11:20 ***GIT: Detecting Uncertainty, Out-Of-Distribution and Adversarial Samples Using Gradients and Invariance Transformations***
Julia Lust and Alexandru Paul Condurache (Robert Bosch GmbH, Germany)

10:00 – 12:00
Virtual: Vision and Robotics with Neural Networks
Day2_AM_RmV1
Room: Virtual Room 1
Session Chair: Saeed Damadi

10:00 ***Bi-ClueMVSNet: Learning Bidirectional Occlusion Clues for Multi-View Stereo***
Zhe Zhang (Peking University, China); Yuxi Hu (The Chinese University of Hong Kong, Shenzhen, China); Huachen Gao and Ronggang Wang (Peking University, China)

10:20 ***Simultaneous Neuromorphic Selection of Multiple Salient Objects for Event Vision***
Amélie Gruel (Laboratoire d'Informatique, Signaux Et Systèmes de Sophia Antipolis (i3s, CNRS) & Université Côte d'Azur, France); Jean Martinet (Université Côte d Azur, i3S/CNRS); Michele Magno (ETH Zurich, Switzerland)

10:40 ***Dual-Path Reconstruction Guided Segmentation Network for Unsupervised Anomaly Detection and Localization***
Junwei Xiao (Tsinghua University, China); Zhixiang Chen (The University of Sheffield, United Kingdom (Great Britain)); Lei Deng (Beijing Information Science And Technology University, China); Baohua Chen, Hanxi Yin and Xiu Li (Tsinghua University, China)

11:00 ***High Dynamic Range Imaging with Context-Aware Transformer***
Fangfang Zhou (China); Dan Zhang (, China & Senslab Technology, China); Zhengming Fu (China)

11:20 ***Gravity-Shift-VIO: Adaptive Acceleration Shift and Multi-Modal Fusion with Transformer in Visual-Inertial Odometr y***
Xin Jin, Jiale Chen, Shuang Zhang and Zhiheng Li (Tsinghua University, China)

11:40 ***Combining Multi-Head Attention and Sparse Multi-Head Attention Networks for Session-Based Recommendation***
Zhiwei Zhao, Xiaoye Wang and Yingyuan Xiao (Tianjin University of Technology, China)

10:00 – 12:00
Virtual: Natural Language Processing Using Neural Networks
Day2_AM_RmV2
Room: Virtual Room 2
Session Chair: Jianzong Wang and Xiao Sun

10:00 ***Personalized Federated Learning via Gradient Modulation for Heterogeneous Text Summarization***
Rongfeng Pan (Ping An Technology (shenzhen) Co., Ltd, China); Jianzong Wang (Pingan, China); Lingwei Kong and Zhangcheng Huang (Ping An Technology (Shenzhen) Co., Ltd., China); Jing Xiao (Ping An Insurance Company of China, Ltd., China)

10:20 ***Multilingual Pre-Training Model-Assisted Contrastive Learning Neural Machine Translation***
Shuo Sun, Hongxu Hou, Zongheng Yang and Yisong Wang (Inner Mongolia University, China)

10:40 ***CoLRP: A Contrastive Learning Abstractive Text Summarization Method with ROUGE Penalty***
Caidong Tan (Hefei University of Technology, China); Xiao Sun (HeFei University of Technology, China)

11:00 ***A Simple Semantics and Topic-Aware Method to Enhance Abstractive Summarization***
Jiangnan Du (Ping An Technology, China); Xuan Fu (Tsinghua University, China); Jianfeng Li, Cuiqin Hou and Qiyu Zhou (Ping An Technology, China); Haitao Zheng (Tsinghua University, China)

11:20 ***EvSegSNN: Neuromorphic Semantic Segmentation for Event Data***
Dalia Hareb (Université Côte d'Azur & Laboratoire d'Informatique, Signaux Et Systémes de Sophia Antipolis (I3S), France); Jean Martinet (Université Côte d'Azur, CNRS, I3S. Sophia Antipolis - France)

11:40 ***Specialty May Be Better: A Decoupling Multi-Modal Fusion Network for Audio-Visual Event Localization***
Jinqiao Dou, Yuehai Wang and Xi Chen (Zhejiang University, China)

10:00 – 12:00
Virtual: Recommender Systems with Neural Networks: Part 2
Day2_AM_RmV3
Room: Virtual Room 3
Session Chair: TianCi Yu and Kalyani Selvarajah

10:00 ***Proxy-Aware Cross-Domain Sequential Recommendation***
Shitong Xiao (Harbin Engineering University,China); Rui Chen, Qilong Han, Riwei Lai and Hongtao Song (Harbin Engineering University, China); Li Li (University of Delaware, USA)

10:20 ***A Novel Sequential Recommendation Model Based on the Filter and Model Augmentation***

TianCi Yu and Jianxia Chen (Hubei University of Technology, China)

10:40 ***Multi-Contrastive Learning Recommendation Combined with Knowledge Graph***
Fei Chen, Zihan Kang, Chenxi Zhang and Chunming Wu (Southwest University, China)

11:00 ***Transfer Learning with Graph Attention Networks for Team Recommendation***
Kalyani Selvarajah, Ziad Kobti and Sagar Kaw (University of Windsor, Canada)

11:20 ***Diversity-Enhanced Recommendation with Knowledge-Aware Devoted and Diverse Interest Learning***
Junfa Lin (Sun Yat-Sen University, China); Jiahai Wang (Sun Yat-sen University, China)

11:40 ***KETM: A Knowledge-Enhanced Text Matching Method***
Kexin Jiang (Yanbian University, China); Yahui Zhao (Yanbian University & Intelligent Information Processing Laboratory, China); Guozhe Jin and Zhenguo Zhang (Yanbian University, China); Rongyi Cui (Yanbian University & Intelligent Information Processing Laboratory, China)

10:00 – 12:00
Virtual: Forecasting and Prediction
Day2_AM_RmV4
Room: Virtual Room 4
Session Chair: Debanjan Konar

10:00 ***Spatio-Temporal Pre-Training Enhanced Fast Pure Tansformer Network for Traffic Flow Forecasting***
Junhao Zhang, Junjie Tang, Juncheng Jin and Zehui Qu (Southwest University, China)

10:20 ***Diffusion Graph Neural Ordinary Differential Equation Network for Traffic Prediction***
Ni Xiong, Yan Yang, Yongquan Jiang and Xiaocao Ouyang (Southwest Jiaotong University, China)

10:40 ***A Temporal Attention-Based Model for Social Event Prediction***
Yinsen Wang and Zhang Xin (National University of Defense Technology, China); Yan Pan (Northwestern Polytechnical University, China); Zexin Fu (National University of Defense Technology, China)

11:00 ***HDResNet: Hierarchical-Decomposition Residual Network for Hierarchical Time Series Forecasting***
Yi Xiang, Haoran Sun and Wenting Tu (Shanghai University of Finance and Economics, China)

11:20 ***Maintaining Distinction and Fairness in Data-Free Class Incremental Learning***
Yu Feng, Hongyu Gao and Wangli Hao (Shanxi Agricultural University, China); Ran Zhao (China Agricultural University, China); Fuzhong Li and Pengcheng Zhao (Shanxi Agricultural University, China); YaDong Guo, Sr (Shan Xi Agricultural University, China); Zhao Xue (Shanxi Agricultural University & None, China)

11:40 ***HGKT: Hypergraph-Based Knowledge Tracing for Learner Performance Prediction***
Yuwei Ye and Zhilong Shan (South China Normal University, China)

12:00 – 13:00
Lunch on your own

13:00 – 15:00
Relation Extraction and Knowledge Distillation with Neural Networks
Day2_PM1_Rm1
Room: Arena 1B
Session Chair: Abul Bashar

13:00 ***A Novel Cross-Fusion Method of Different Types of Features for Image Captioning***
Liangshan Lou, Ke Lu and Jian Xue (University of Chinese Academy of Sciences, China)

13:20 ***Improving Relation Extraction by Entity-Level Contrastive Learning***
Lu Ting and ShengBiao Wang (Donghua University, China); Qiubo Huang (School of Computer Science and Technology, China); Wenjing Guo, Shan Chang and Guohua Liu (Donghua University, China)

13:40 ***"Find the Table": A Contrastive Learning-Based Approach with Faster RCNN for Establishing Tabular Entity Relationships***
Sarmistha Das (Indian Institute of Technology, Patna, India); Tuhinangshu Gangopadhyay (Government College of Engineering and Leather Technology, India); Atulya Deep (SRM Institute of Science and Technology, India); Sriparna Saha (Indian Institute of Technology Patna, India); Alka Maurya (CRISIL DS COE, India)

14:00 ***PGLR: Pseudo Graph and Label Reuse for Entity Relation Extraction***
Hanyue Zhang and Li Li (Southwest University, China); Jun Shen (University of Wollongong, Australia)

14:20 ***Vax-Culture: A Dataset for Studying Vaccine Discourse on Twitter***
Mohammad Reza Zarei, Michael Christensen, Sarah Everts and Majid Komeili (Carleton University, Canada)

14:40 ***Data-Locked Knowledge Distillation with Ready-To-Use Substitutes***
Jian-Ping Mei, Jie Chen and Xinkai Chu (Zhejiang University of Technology, China)

13:00 – 15:00
Large-Scale Neural Networks
Day2_PM1_Rm2
Room: Arena 1A
Session Chair: Philip Kenneweg

13:00 ***Faster Convergence for Transformer Fine-Tuning with Line Search Methods***
Philip Kenneweg (University Bielefeld, Germany); Leonardo Galli (RWTH Aachen University, Germany); Tristan Kenneweg and Barbara Hammer (University Bielefeld, Germany)

13:20 ***Boundary-Aware Set Abstraction for 3D Object Detection***
Zhe Huang and Yongcai Wang (Renmin University of China, China); Xingui Tang and Hongyu Sun (Remin University of China, China)

13:40 ***Adaptive Multi-Resolution Attention with Linear Complexity***
Yao Zhang (LMU Munich, Germany); Yunpu Ma (Ludwig Maximilian University of Munich & Siemens CT, Germany); Thomas Seidl (Ludwig-Maximilians University of Munich, Germany); Volker Tresp (Siemens, Germany)

14:00 ***Verbalizer or Classifier? A New Prompt Learning Model for Event Causality Identification***
Weiwei Zhang (Beijing University of Posts and Telecommunications, China); Linmei Hu (Beijing University of Posts and Telecommunications, Hong Kong); Yuting Wei (Bejing University of Posts and Telecommunications, China); Bin Wu (Beijing University of Post and Telecommunications, China)

14:20 ***Improving the Local Stability of Deep Model with Margin Losses***
Haonan Wang, Pengbo Yang and Jitao Sang (Beijing Jiaotong University, China)

14:40 ***SGED-Net: A Self-Organizing Graph Embedding Deep Network for Travel Time Estimation***
Jiankai Zuo and Yaying Zhang (Tongji University, China)

13:00 – 15:00
Object and Defect Detection Using Neural Networks: Part 1
Day2_PM1_Rm3
Room: Foyer E
Session Chair: Mansour Zoubeirou A Mayaki

13:00 ***CaT: Cyclic-Accumulation Transformer for Lane Detection***
Dezhen Qi (Xiamen University, China); Jun Xie (Lenovo Research PCIE, China); Guoyu Yang, Dongdong Liu, Ye Qiu and Yuer Lu (Xiamen University, China); Xiaoming Jiang (Wenzhou Institute, China); Jianwei Shuai (Xiamen University, China)

13:20 ***LD2-YOLO: A Defect Detection Method for Automotive Composite Leather***
Meng Chen (China); Jun Gao (Jianghan University, China); Wuxin Yu and Hujian Peng (China)

13:40 ***Multi-View Graph Contrastive Learning for Urban Region Representation***
Yu Zhang, Yonghui Xu, Lizhen Cui and Zhongmin Yan (Shandong University, China)

14:00 ***OSDet: Towards Open-Set Object Detection***
Chao Gao (& Ant Group, China); Jiaran Hao (INF, China); Ya Guo (Ant Group, China)

14:20 ***Machinery Anomaly Detection Using Artificial Neural Networks and Signature Feature Extraction***
Mansour Zoubeirou A Mayaki (Université Côte d'Azur & INRIA, France); Michel Riveill (Universite' Côte D'Azur, France)

14:40 ***TADS: Temporal Autoencoder Dynamic Series Framework for Unsupervised Anomaly Detection***
ZhengYu Li and Desheng Zheng (Southwest Petroleum University, China)

13:00 – 15:00
Neural Networks for Cyber Security: Part 2
Day2_PM1_Rm4
Room: Central Room B
Session Chair: Himanshi Charotia

13:00 ***Security Evaluation of Emojis in NLP Tasks***
Hao Ma (Yanshan University, China); Hongyu Sun (XIDIAN University, China); Haitao Pang (Yanshan University, China); Zhang Yu qing (Graduate University of Chinese Academy of Science, China)

13:20 ***Robust Secret Data Hiding for Transformer-Based Neural Machine Translation***
Tianhe Lu and Gongshen Liu (Shanghai Jiao Tong University, China); Ru Zhang (BUPT, China); Peixuan Li and Tianjie Ju (Shanghai Jiao Tong University, China)

13:40 ***Zero-Knowledge Attack for Replicating Protected Deep Neural Networks***
Itay Mosafi and Eli David (Bar-Ilan University, Israel); Nathan Netanyahu (Bar Ilan Un, Israel)

14:00 ***Exploring Machine Learning Privacy/Utility Tradeoff from a Hyperparameters Lens***
Arous Ayoub, Amira Guesmi and Muhammad Abdullah Hanif (New York University Abu Dhabi, United Arab Emirates); Ihsen Alouani (Queen's University Belfast, United Kingdom (Great Britain)); Muhammad Shafique (NYU Abu Dhabi, United Arab Emirates)

14:20 ***TETRAA - Trained and Selective Transmutation of Encoder-Based Adversarial Attack***
Sarthak Malik (IIT Roorkee, India); Himanshi Charotia and Gaurav Dhama (Mastercard, India)

13:00 – 15:00
Graph Neural Networks
Day2_PM1_Rm5
Room: Central Room C
Session Chair: Jun Yan and Gaurab Bhattacharya

13:00 ***Personalized Outfit Compatibility Prediction Using Outfit Graph Network***
B S Vivek, Gaurab Bhattacharya and Jayavardhana Gubbi (TCS Research, India); Bagya Lakshmi V, Arpan Pal and P. Balamuralidhar (Tata Consultancy Services, India)

13:20 ***TC-GAT: Graph Attention Network for Temporal Causality Discovery***
Xiaosong Yuan (Jilin University, China); Ke Chen (JD Group, China); Wanli Zuo (Jilin University, China); Yijia Zhang (National University of Defense Technology, China)

13:40 ***DualHGNN: A Dual Hypergraph Neural Network for Semi-Supervised Node Classification Based on Multi-View Learning and Density Awareness***
Jianpeng Liao (South China University of Technology, China); Jun Yan (Concordia University, Canada); Qian Tao (South China University of Technology, China)

14:00 ***TransGNN: A Transductive Graph Neural Network with Graph Dynamic Embedding***
Leandro Anghinoni (University of Sao Paulo, Brazil); Yu-tao Zhu (China Branch of BRICS Institute of Future Networks, China); Donghong Ji (Wuhan University, China); Liang Zhao (University of Sao Paulo, Brazil)

14:20 ***SGDP: A Stream-Graph Neural Network Based Data Prefetcher***
Yiyuan Yang (University of Oxford, United Kingdom (Great Britain)); Rongshang Li (University of Sydney, Australia); Qiquan Shi, Xijun Li, Gang Hu and Xing Li (Huawei, China); Mingxuan Yuan (Noah's Ark Lab, Huawei, Hong Kong)

13:00 – 15:00
Neural Networks for Video Processing: Part 1
Day2_PM1_Rm6
Room: Room 5
Session Chair: Song Wu

13:00 ***Exploiting Deep Learning for Sentence-Level Lipreading***
Isabella Wu (Choate Rosemary Hall, USA); Xin Wang (Stony Brook University, USA)

13:20 ***Camera Coach: Activity Recognition and Assessment Using Thermal and RGB Videos***
Ahmed Sharshar (Egypt-Japan University of Science and Tehnology, Egypt & MBZUAI, United Arab Emirates); Ahmed Hesham Aboeitta (Egypt-Japan University of Science and Technology, Egypt & MBZUAI, United Arab Emirates); Ahmed Fayez Elghareb (Egypt-Japan University of Science and Technology, Egypt); Mohamed A. Khamis Omar (Egypt-Japan University of Science and Technology, Egypt & Ejada, Egypt); Ahmed Bayoumi Zaky (Egypt-Japan University of Science and Technology, Egypt); Walid Gomaa (Egypt Japan University of Science and Technology, Egypt)

13:40 ***Retrieval-Based Natural 3D Human Motion Generation***
Yuqi Li, Song Wu and Yizhi Luo (Southwest University, China)

14:00 ***METEOR Guided Divergence for Video Captioning***
Daniel Rothenpieler and Shahin Amiriparian (University of Augsburg, Germany)

14:20 ***Two-Stream Heterogeneous Graph Network with Dynamic Interactive Learning for Video Question Answering***
Min Peng, Xiaohu Shao and Yu Shi (Chongqing Institute of Green and Intelligent Technology, Chinese Academy of Sciences, China); Xiangdong Zhou (Chinese Academy of Sciences, China)

14:40 ***Multi-Channel Attentive Weighting of Visual Frames for Multimodal Video Classification***
Yuqing Wang, Zhuang Qi, Xiangxian Li, Jinxing Liu, Xiangxu Meng and Lei Meng (Shandong University, China)

13:00 – 15:00
Unsupervised Learning and Clustering: Part 2
Day2_PM1_Rm7
Room: Room 6
Session Chair: M. Tanveer

13:00 ***Deep Hashing Capable of Adding New Dataset Without Class Labels***
Ye Chenyang and Hisashi Koga (University of Electro-Communications, Japan)

13:20 ***Hybrid Clustering Solutions Fusion Based on Gated Three-Way Decision***
Kaixiang Yang (South China University of Technology, China); Yifan Shi (Huaqiao University, China); Zhiwen Yu and Zhijie Zhong (South China University of Technology, China); Jichao Bi and Mengzhi Wang (Zhejiang University, China)

13:40 ***Forecasting Evolution of Clusters in Game Agents with Hebbian Learning***
Beomseok Kang and Saibal Mukhopadhyay (Georgia Institute of Technology, USA)

14:00 ***Joint Multi-View Collaborative Clustering***
Yasser Khalafaoui (CY Cergy Paris University & ALTECA Company, France); Basarab Matei (Université Paris 13 Sorbonne Paris Cité, France); Nistor Grozavu (CY Cergy Paris Université, France); Martino Lovisetto (Alteca Company, France)

14:20 ***Lifelong Machine Learning for Topic Modeling Based on Hellinger Distance***
Mohammad Daradkeh (University of Dubai, United Arab Emirates); Wathiq Mansoor (Universithy OF Dubai, United Arab Emirates); Shadi Atalla, Yassine Himeur and Oussama Kerdjidj (University of Dubai, United Arab Emirates)

13:00 – 15:00
Special Session: Recommender Systems, Digital Marketing and Consumer Behaviour Prediction
Day2_PM1_Rm8
Room: Room 7
Session Chair: Mohamed Bader-El-Den

13:00 ***DEPHN: Different Expression Parallel Heterogeneous Network Using Virtual Gradient Optimization for Multi-Task Learning***
Menglin Kong and Ri Su (Central South University, China); Shaojie Zhao (Shanghai University of Engineering Science, China); Muzhou Hou (Central South University, China)

13:20 ***Dual-Scale Interest Extraction Framework with Self-Supervision for Sequential Recommendation***
Liangliang Chen (Beijing University of Posts and Telecommunications, China); Hongzhan Lin (Hong Kong Baptist University, Hong Kong); Guang Chen (Beijing University of Posts and Telecommunications, China)

13:40 ***Multi-View User Representation Learning for User Matching Without Personal Information***
Hongliu Cao (Amadeus, France); Ilias El Baamrani (Mines Nancy, France); Eoin Thomas (UCC, Ireland)

14:00 ***A Machine Learning Approach to Personality-Based Persuasion Marketing***
Evripidis Christodoulou and Andreas Gregoriades (Cyprus University of Technology, Cyprus)

14:20 ***Improving REITs Time Series Prediction Using ML and Technical Analysis Indicators***
Fatim Zahra Habbab, Michael Kampouridis and Tasos Papastylianou (University of Essex, United Kingdom (Great Britain))

13:00 – 15:00
Deep Learning for Anomaly Detection
Day2_PM1_Rm9
Room: Room 8
Session Chairs: Dinesh Singh and Andrea Cavallo

13:00 ***Cross-Domain Transformation for Outlier Detection on Tabular Datasets***
Dayananda Herurkar (DFKI, Germany); Timur Sattarov (Deutsche Bundesbank, Germany); Jörn Hees (Bonn-Rhein-Sieg University of Applied Sciences, Germany); Sebastian Palacio and Federico Raue (DFKI, Germany); Andreas Dengel (Deutsche Forschungszentrum für Künstliche Intelligenz GmbH, Germany)

13:20 ***LogPrompt: A Log-Based Anomaly Detection Framework Using Prompts***
Ting Zhang (Peking University, China); Xin Huang (Beijing Institute of Technology, China); Wen Zhao (National Engineering Research Center for Software Engineering Peking University China, China); Shaohuang Bian (China Agricultural University, China); Peng Du (Peking University, China)

13:40 ***Few-Shot Learning for Trajectory Outlier Detection with Only Normal Trajectories***
Yueyang Su (University of Chinese Academy of Sciences & Institute of Computing Technology, Chinese Academy of Sciences, China); Di Yao (Institute of Computing Technology Chinese Academy of Sciences, China); Jingping Bi (Institute of Computing Technology, Chinese Academy of Sciences, China)

14:00 ***LM2Graph: Detecting Network Lateral Movement via Temporal Graph Representation Learning***
Jackie Liu (School of Cyber Security, University of Chinese Academy of Sciences, China); Shaopu Wang (University of Chinese Academy of Sciences, China); Jinqiao Shi (Beijing University of Posts and Telecommunications, China); Tingwen Liu (Institute of Information Engineering, Chinese Academy of Sciences, China); Junchao Xiao and Xiangru Lv (Chinese Academy of Sciences, China)

14:20 ***Anomalous Activity Detection from Ego View Camera of Surveillance Robots***
Mritunjoy Halder (IIEST Shibpur, India); Snehasis Banerjee (Tata Consultancy Services, India); Balamuralidhar Purushothaman (TCS Research, India)

14:40 ***Interaction-Focused Anomaly Detection on Bipartite Node-And-Edge-Attributed Graph***
Rizal Fathony (Grab, Indonesia); Jenn Ng and Jia Chen (Grab, Singapore)

13:00 – 15:00
Virtual: Deep Learning Algorithms: Part 2
Day2_PM1_RmV1
Room: Virtual Room 1
Session Chair: Tao Zhang

13:00 ***Modal Neural Network: Robust Deep Learning with Mode Loss Function***
Liangxuan Zhu, Han Li, Wen Wen, Lingjuan Wu and Hong Chen (Huazhong Agricultural University, China)

13:20 ***Bayesian Sharpness-Aware Prompt Tuning for Cross-Domain Few-Shot Learning***
Shuo Fan, Liansheng Zhuang and Aodi Li (University of Science and Technology of China, China)

13:40 ***An Improved Relation Extraction Method Based on Information Control Injection and Attention-Guided Densely Connected Graph Convolutional Network***
Zirui Zhang, Fanfang Meng, Xiaoxia Liu, Yuanhui Meng, Yiyu Yang and Benhui Chen (Dali University, China)

14:00 ***RepEPnP: Weakly Supervised 3D Human Pose Estimation with EPnP Algorithm***
Huaijing Lai (Shenzhen University, China); Zhenhua Tang (Hefei University of Technology, China); Xiaoyan Zhang (Shenzhen University, China)

14:20 ***Joint Node Representation Learning and Clustering for Attributed Graph via Graph Diffusion Convolution***
Yiwei Guo (Zhengzhou University, China); Le Kang (Tsinghua University, China & Zhengzhou Commodity Exchange, China); Mengqi Wu and Lijuan Zhou (Zhengzhou University, China); Zhihong Zhang (Zhengzhou Univsity, China)

14:40 ***The Backpropagation Algorithm for a Math Student***
Saeed Damadi (University of Maryland, Baltimore County, USA); Golnaz Moharrer, Mostafa Cham and Jinglai Shen (University of Maryland Baltimore County, USA)

13:00 – 15:00
Virtual: Classifiers: Part 2
Day2_PM1_RmV2
Room: Virtual Room 2
Session Chair: Rohit Raj and Hari Pandey

13:00 ***VDCL: A Supervised Text Classification Method Based on Virtual Adversarial and Contrast Learning***
Ximeng Dou (Qilu University of Technology, China); Jing Zhao (Qilu University of Technology(Shandong Academy of Sciences), China); Ming Li (Shandong University of Traditional Chinese Medicine, China)

13:20 ***Exploiting ResNeXt with Convolutional Shortcut for Signal Modulation Classification at Low SNRs***
Yuanyuan Gu (Institute of Software Chinese Academy of Sciences & University of Chinese Academy of Sciences, China); Xin Zhou (Institute of Software Chinese Academy of Sciences, China)

13:40 ***SWTA: Sparse Weighted Temporal Attention for Drone-Based Activity Recognition***
Santosh Kumar Yadav (National University of Ireland, Ireland); Esha Pahwa and Achleshwar Luthra (Birla Institute of Technology and Science, India); Kamlesh Tiwari (BITS Pilani, India); Hari Mohan Pandey (Bournemouth University, United Kingdom (Great Britain))

14:00 ***Research on Fake News Detection Method Based on Multi-Level Semantic Enhancement***
Xinyan Yin and Tao Sun (Qilu University of Technology (Shandong Academy of Sciences)); Chunyan Yang (Shandong Urban Construction Vocational College, China); Zihao Zhang, Xiang Zhang and Mengli Su (Qilu University of Technology (Shandong Academy of Sciences))

14:20 ***Semi-Supervised Multi-Label Learning with Missing Labels via Correlation Information***
Zexian Xie, Peipei Li and Xindong Wu (Hefei University of Technology, China)

14:40 ***Multivariate Time Series Classification via Hierarchical Graph Embedding***
Wenhao Niu, Xingrui Zhuo, Gongqing Wu, Junwei Lv, Zan Zhang and Chenyang Bu (Hefei University of Technology, China)

13:00 – 15:00
Virtual: Image Super-Resolution and Dehazing
Day2_PM1_RmV3
Room: Virtual Room 3
Session Chair: Paolo Pietro Arena and HuiMing Li

13:00 ***An Efficient Frequency Domain Separation Network for Paired and Unpaired Image Super-Resolution***
Huan Liu, Mingwen Shao, Yuanjian Qiao and Fukang Liu (China University of Petroleum (East China), China)

13:20 ***Wavelet Dual-Stream Network for Brain MR Image Super-Resolution***
Wanliang Wang, Fangsen Xing, Jiacheng Chen and Guan Qiu (Zhejiang University of Technology, China)

13:40 ***LCCN: A Lightweight Capture Context Network for Image Super-Resolution***
Changchun Wen, Zhao Shengrong and Liang Hu (Qilu University of Technology, China)

14:00 ***MHRNet: A Multi-Stage Image Deblurring Approach with High-Resolution Representation Learning***
Wenfu Liu (ShangHai University, China); Junjie Peng, Haochen Yuan and Lumin Zhang (Shanghai University, China); Zesu Cai (Harbin Institute of Technology, China)

14:20 ***Residual Hybrid Attention Network for Single Image Dehazing***
HuiMing Li (University of Science and Technology Liaoning, China)

14:40 ***A Novel Score-CAM Based Denoiser for Spectrographic Signature Extraction Without Ground Truth***
Noel Elias (University of Texas at Austin, USA)

13:00 – 15:00
Virtual: Sentiment and Emotion
Day2_PM1_RmV4
Room: Virtual Room 4
Session Chair: Haokai Ma

13:00 ***Improving Aspect Sentiment Triplet Extraction with Perturbed Masking and Edge-Enhanced Sentiment Graph Attention Network***
Songhua Yang, Yuxiang Jia, Tengxun Zhang and Hongfei Xu (Zhengzhou University, China)

13:20 ***Dual-Encoder Attention Fusion Model for Aspect Sentiment Triplet Extraction***
Yunqi Zhang, Songda Li, Yuquan Lan and Hui Zhao (East China Normal University, China); Gang Zhao (Microsoft, China)

13:40 ***From Implicit to Explicit: A Simple Generative Method for Aspect-Category-Opinion-Sentiment Quadruple Extraction***
Songda Li, Yunqi Zhang, Yuquan Lan and Hui Zhao (East China Normal University, China); Gang Zhao (Microsoft, China)

14:00 ***Emp-USIR: A Unidirectional Synchronous Interactive Reasoning Model for Empathetic Dialogue***
Liting Jiang, Di Wu, Yanbing Li and Wushouer Silamu (Xinjiang University, China)

14:20 ***EEG Model Compression by Network Pruning for Emotion Recognition***
Rao WenJie and Zhong Shenghua (Shenzhen University, China)

14:40 ***Spatial-Temporal Constraint Learning for Cross-Subject EEG-Based Emotion Recognition***
Wei Li, Bowen Hou, Shitong Shao, Wei Huan and Ye Tian (China)

15:00 – 15:30
Coffee Break
Room: Hall 1

15:30 – 16:30
Plenary: Marco Gori
Room: Arena 1B
Session Chairs: Xin Yao and Junbin Gao

Learning With No Data Collections
Marco Gori
University of Siena

By and large, the spectacular results of machine learning rely on the appropriate organization of huge data collections, which has strongly pushed the development of top level solutions by big companies. I this talk we propose an orthogonal research direction where we expect that perceptual cognitive skills (e.g. in language, vision, and control) can emerge simply by of environmental interactions without needing to store and properly organize big data collections. The proposed approach relies on moving the framework of statistical machine learning to that of learning over time by solving optimization problems similar to those that are at the basis of laws in Physics. We show that any classic learning process arises from the forward solution of classic variational problems and provide preliminary experimental evidence of the effectiveness of the theory.

16:30 – 18:30
Feature Extraction: Part 1
Day2_PM2_Rm1
Room: Arena 1B
Session Chairs: Deepthi Praveenlal Kuttichira

16:30 ***Deep Feature Extraction for Data Assimilation with Ensemble Smoother***
Rodrigo Exterkoetter (Federal University of Santa Catarina & LTrace, Brazil); Gustavo Rachid Dutra and Leandro Passos de Figueiredo (LTrace, Brazil); Fernando Bordignon (LTRACE, Brazil); Alexandre Anoze Emerick and Gilson Moura Silva Neto (Petrobras S.A., Brazil); Mauro Roisenberg (University Federal of Santa Catarina - UFSC, Brazil)

16:50 ***Benchmarking Feature Extraction Techniques for Textual Data Stream Classification***
Bruno S Thuma, Pedro S. de Vargas and Cristiano Garcia (Pontifícia Universidade Católica do Paraná, Brazil); Alceu Britto (PUCPR, Brazil); Jean Paul Barddal (Pontifícia Universidade Católica do Paraná & Programa de Pós-Graduação Em Informática, Brazil)

17:10 ***GLSI Texture Descriptor Based on Complex Networks for Music Genre Classification***
Andrés Eduardo Coca Salazar (Federal University of Technology - Paraná (UTFPR-TD), Brazil)

17:30 ***Unsupervised Arabic Speech Embedding Model for Speaker Identification***
Noora Al Roken, Abir Hussain and Ismaill M. Shahin (University of Sharjah, United Arab Emirates); Bilal Khan (California State University San Bernardino, USA); Wasiq Khan (Liverpool John Moores University, United Kingdom (Great Britain))

17:50 ***Common and Unique Features Learning in Multi-View Network Embedding***
Yifan Shang, Xiucai Ye and Tetsuya Sakurai (University of Tsukuba, Japan)

18:10 ***Novel Automatic Deep Learning Feature Extractor with Target Class Specific Feature Explanations***
Deepthi Praveenlal Kuttichira and Brijesh Verma (Griffith University, Australia); Ashfaqur Rahman (CSIRO, Australia); Lipo Wang (Nanyang Technological University, Singapore)

16:30 – 18:30
Medical Image Recognition Using Neural Networks: Part 2
Day2_PM2_Rm2
Room: Arena 1A
Session Chair: Sarada Prasad Dakua

16:30 ***Neural Network-Based Fast Liver Ultrasound Image Segmentation***
Mohammed Yusuf Ansari (Texas AM University, USA); Iffa Afsa Changaai Mangalote (Hamad Medical Corporation, Qatar); Dima Masri (King Faisal University, Saudi Arabia); Sarada Prasad Dakua (Hamad Medical Corporation, Qatar)

16:50 ***A Two-Stream Channel Cross Enhancement Network for Diabetic Retinopathy Classification***
Zhuoqun Xia and Qisheng Jiang (Changsha University of Science and Technology, China); Wenjing Li (The First Affiliated Hospital of Hunan Normal University & The First Affiliated Hospital of Guangxi Medical University, China); Hangyu Hu (Changsha University of Science and Technology, China); Chengzhang Zhu and Ziwei Zou (Central South University, China)

17:10 ***A Framework for Identifying Diabetic Retinopathy Based on Patch Attention and Lesion Location***
Zhuoqun Xia and Hangyu Hu (Changsha University of Science and Technology, China); Wenjing Li (The First Affiliated Hospital of Hunan Normal University & The First Affiliated Hospital of Guangxi Medical University, China); Qisheng Jiang (Changsha University of Science and Technology, China); Chengzhang Zhu and Ziwei Zou (Central South University, China)

17:30 ***Efficient Early Warning System in Identifying Enset Bacterial Wilt Disease Using Transfer Learning***
Bete Aberra Fulle, Chao Ma, Xiaochuan Shi and Weiping Zhu (Wuhan University, China); Zerihun Yemataw and Ephrem Assefa (Southern Agricultural Research Institute, Ethiopia)

17:50 ***Cerebral Thrombus Segmentation in CT Angiography Using Refinement Segmentation Network with Context Pooling***
Jinbi Liang, Yunhao Li, Shijie Chen and Wang (Wuhan University, China); Chuang Nie, Zhiming Kang and Bin Mei (Zhongnan Hospital of Wuhan University, China)

18:10 ***An Empirical Analysis of Vision Transformers Robustness to Spurious Correlations in Health Data***
Anisio Lacerda, Daniel Ayala and Francisco Malaguth (Federal University of Minas Gerais, Brazil); Fabio Kanadani (Faculda de Ciencias Medicas, Brazil)

16:30 – 18:30
Neural Network Models: Part 1
Day2_PM2_Rm3
Room: Foyer E
Session Chairs: Tim Whitaker and Luca Hermes

16:30 ***An Empirical Study on Data Balancing in Machine Learning Based Software Traceability Methods***
Bangchao Wang, Zihan Wang, Hongyan Wan, Xingfu Li and Yang Deng (Wuhan Textile University, China)

16:50 ***A Semi-Supervised Learning Method for Spiking Neural Networks Based on Pseudo-Labeling***
Thao N. N. Nguyen (National University of Singapore, Singapore); Bharadwaj Veeravalli (National Uniersity of Singapore, Singapore); Xuanyao Fong (National University of Singapore, Singapore)

17:10 ***Online Semisupervised Pairwise Learning***
Majdi Khalid (Umm Al-Qura University, Saudi Arabia)

17:30 ***C-SRCIL: Complex-Valued Class-Incremental Learning for Signal Recognition***
Zhaoyu Fan, Ya Tu and Qingjiang Shi (Tongji University, China)

17:50 ***Synaptic Stripping: How Pruning Can Bring Dead Neurons Back to Life***
Tim Whitaker and Darrell Whitley (Colorado State University, USA)

18:10 ***Extreme Events in Small Ensemble of Bursting Neurons with Chemical and Electrical Couplings***
Sergey Olenin (Lobachevsky State University of Nizhny Novgorod, 23 Prospekt Gagarina, Nizhny Novgorod, Russia); Tatiana Levanova (Lobachevsky University, Russia)

16:30 – 18:30
Image Segmentation with Neural Networks
Day2_PM2_Rm4
Room: Central Room B
Session Chair: Siamak Mehrkanoon

16:30 ***A Generative Data Augmentation Trained by Low-Quality Annotations for Cholangiocarcinoma Hyperspectral Image Segmentation***
Kaijie Dai, Zehao Zhou, Song Qiu, Yan Wang, Mei Zhou, Mingshuai Li and Qingli Li (East China Normal University, China)

16:50 ***SAR-UNet: Small Attention Residual UNet for Explainable Nowcasting Tasks***
Mathieu Renault (Maastricht University, The Netherlands); Siamak Mehrkanoon (Utrecht University, The Netherlands)

17:10 ***Self-Supervised and Semi-Supervised Polyp Segmentation Using Synthetic Data***
Enric Moreu (Dublin City University & Insight SFI Research Centre for Data Analytics, Ireland); Eric Arazo and Kevin McGuinness (Dublin City University, Ireland); Noel E O'Connor (Dublin City University & CLARITY: Centre for Sensor Web Technology, Ireland)

17:30 ***MHCP-RCNN: Multi-Human Color Parsing Segmentation Using Multi-Task Network***
Abhilash Sk (Senior Technical Lead, India); Venu Madhav Nookala, Adithya Babu, Karthik S and Mithun R (Developer, India)

17:50 ***MemAU-Net: Memory-Enhanced Attention U-Net for Medical Image Forgery Localization***
Nan Wang, Liping Yi, Gang Wang and Xiaoguang Liu (Nankai University, China)

18:10 ***ECANodule: Accurate Pulmonary Nodule Detection and Segmentation with Efficient Channel Attention***
Deng Luo (Peking University, China); Qingyuan He (The Third Hospital of Peking University, China); Meng Ma and Kun Yan (Peking University, China); Defeng Liu (The Third Hospital of Peking University, China); Ping Wang (Peking University, China)

16:30 – 18:30
Machine Learning Algorithms
Day2_PM2_Rm5
Room: Central Room C
Session Chair: Xin Ma

16:30 ***Fairer Machine Learning Through the Hybrid of Multi-Objective Evolutionary Learning and Adversarial Learning***
Shenhao Gui, Qingquan Zhang, Changwu Huang and Bo Yuan (Southern University of Science and Technology, China)

16:50 ***A Determinantal Point Process Based Novel Sampling Method in Latent Semantic Space of Abstractive Text Summarization***
Jianbin Shen, Junyu Xuan and Christy Jie Liang (University of Technology Sydney, Australia)

17:10 ***Hierarchical Knowledge Transfer Network for Distantly Supervised Relation Extraction***
Wei Song and Weishuai Gu (Jiangnan University, China)

17:30 ***EARP: Integration with Entity Attribute and Relation Path for Event Knowledge Graph Representation Learning***
Ze Xu (College of Computer Science and Technology & Huaqiao University, China); Huazhen Wang, Ting He and Hao Zhou (Huaqiao University, China)

17:50 ***pGBF: Personalized Gradient Boosting Forest***
Batnyam Enkhtaivan (NEC Corporation, Japan); Isamu Teranishi (NEC, Japan)

18:10 ***Implementing Responsible AI: Tensions and Trade-Offs Between Ethics Aspects***
Conrad Sanderson (Data61/CSIRO & Griffith University, Australia); David Douglas and Qinghua Lu (CSIRO, Australia)

16:30 – 18:30
Neural Networks for Video Processing: Part 2
Day2_PM2_Rm6
Room: Room 5
Session Chair: Rakesh Sanodiya

16:30 ***ED-T2V: An Efficient Training Framework for Diffusion-Based Text-To-Video Generation***
Jiawei Liu (University of Chinese Academy of Sciences & Institute of Automation, Chinese Academy of Sciences, China); Weining Wang (Institute of Automation, Chinese Academy of Sciences, China); Wei Liu and Qian He (ByteDance Inc, China); Jing Liu (Institute of Automation, Chinese Acadamy of Sciences, China)

16:50 ***Snippet-Level Supervised Contrastive Learning-Based Transformer for Temporal Action Detection***
Ronghai Xu and Changhong Liu (Jiangxi Normal University, China); Yong Chen (Nanchang Institute of Technology, China); Zhenchun Lei (Jiangxi Normal University, China)

17:10 ***Multimodal Video Emotional Analysis of Time Features Alignment and Information Auxiliary Learning***
Yujie Chang (Nanjing University of Posts and Telecommunications, China); Tianliang Liu (Nanjing University of Posts and Telecommunications & Jiangsu Provincial Key Lab of Image Processing and Image Communication, China); Qinchao Xu, Xinyu Zhao, Xun Xiao and Zhengjie Wang (Nanjing University of Posts and Telecommunications, China)

17:30 ***Spatio-Temporal Analysis of Dashboard Camera Videos for Time-To-Accident Forecasting***
Taif Anjum (University of British Columbia, Canada); Daya Kumar (Western University, Canada); Apurva Narayan (Western University, Canada & University of Waterloo, Canada)

17:50 ***Real-Time Night Surveillance Video Retrieval Through Calibrated Denoising and Super-Resolution***
Liming Ge, Wei Bao, Xinyi Sheng and Dong Yuan (The University of Sydney, Australia); Bing Bing Zhou (School of InformationTechnologies, University of Sydney, Australia)

18:10 ***Backchannel Detection and Agreement Estimation from Video with Transformer Networks***
Ahmed M. I. Amer and Chirag Bhuvaneshwara (German Research Center for Artificial Intelligence, Germany); GowthamKrishna Addluri, Mohammed Maqsood Shaik and Vedant Bonde (Saarland University, Germany); Philipp Müller (German Research Center for Artificial Intelligence, Germany)

16:30 – 18:30
Neural Networks for Data Classification: Part 1
Day2_PM2_Rm7
Room: Room 6
Session Chair: Pourya Shamsolmoali

16:30 ***Complex Network-Based Data Classification Using Minimum Spanning Tree Metric and Optimization***
Josimar E. Chire Saire and Liang Zhao (University of Sao Paulo, Brazil)

16:50 ***Handling Class Imbalance by Estimating Minority Class Statistics***
Faizanuddin Ansari and Swagatam Das (Indian Statistical Institute, India); Pourya Shamsolmoali (East China Normal University, China)

17:10 ***Audioset Classification with Graph Convolutional Attention Model***
Xuliang Li (University of Sydney, Australia)

17:30 ***Bipolar Population Threshold Encoding for Audio Recognition with Deep Spiking Neural Networks***
Xiaocui Lin and Jiangrong Shen (Zhejiang University, China); Jun Wen (Harvard University, American Samoa); Huajin Tang (Zhejiang University, China)

17:50 ***Prototype Based Linear Sub-Manifold Learning***
Mengling Fan (University of Chinese Academy of Science, China); Fengzhen Tang (Chinese Academy of Sciences, China); Xingang Zhao (Shenyang Institute of Automation, Chinese Academy of Sciences, China)

18:10 ***Pretrained Parameter Configurator for Large Neighborhood Search to Solve Weighted CSPs***
Junsong Gao, Ziyu Chen and ZHang CHeng (Chongqing University, China)

16:30 – 18:30
Special Session: Reservoir Computing: theory, models, and applications
Day2_PM2_Rm8
Room: Room 7
Session Chairs: Andrea Ceni and Claudio Gallicchio

16:30 ***On the Effectiveness of Randomized Signatures as Reservoir for Learning Rough Dynamics***
Enea Monzio Compagnoni (University of Basel, Switzerland); Anna Scampicchio, Luca Biggio, Antonio Orvieto, Thomas Hofmann and Josef Teichmann (ETH Zurich, Switzerland)

16:50 ***Real-Time Photonic Deep Reservoir Computing for Speech Recognition***
Enrico Picco and Serge Massar (Université Libre de Bruxelles, Belgium)

17:10 ***Delay-Sensitive Local Plasticity in Echo State Networks***
Stefan Teodor Iacob (Ghent University, Belgium); Spyridon Chavlis and Panayiota Poirazi (IMBB-FORTH, Greece); Joni Dambre (Gent University, Belgium)

17:30 ***The Effect of System Timescale on Virtual Node Connectivity Within Delay-Feedback Reservoirs***
Alexander C McDonnell and Martin Trefzer (University of York, United Kingdom (Great Britain))

17:50 ***MAdapter: A Multimodal Adapter for Liquid State Machines Configures the Input Layer for the Same Reservoir to Enable Vision and Speech Classification***
Anmol Biswas (IIT Bombay, India); Nivedya S Nambiar, Kushal Kejriwal and Udayan Ganguly (Indian Institute of Technology Bombay, India)

18:10 ***Real-World Performance Estimation of Liquid State Machines for Spoken Digit Classification***

Abhishek Kadam (Indian Institute of Technology, India); Anmol Biswas (IIT Bombay, India); Vivek Saraswat (Indian Institute of Technology Bombay, India); Ajay Singh (Indian Institute of Technology, India); Laxmeesha Somappa (Indian Institute of Technology Bombay, India); Maryam Shojaei Baghini (IITB, India); Udayan Ganguly (Indian Institute of Technology Bombay, India)

16:30 – 18:30
Special Session: Domain Adaptation for Complex Situations: Theories, Algorithms and Applications
Day2_PM2_Rm9
Room: Room 8
Session Chairs: Zhen Fang and Jie Lu

16:30 ***One-Step Domain Adaptation Approach with Partial Label***
Guohang Zeng (University of Technology Sydney, Australia); Zhen Fang (University of Techonology Sydney, Australia); Guangquan Zhang (University of Technology, Sydney, Australia); Jie Lu (UTS, Australia)

16:50 ***Angular Penalty for Few-Shot Incremental 3D Object Learning***
Bingtao Ma (Shenyang Institute of Automation Chinese Academy of Science, China); Yang Cong (Chinese Academy of Sciences, China)

17:10 ***Crucial Semantic Classifier-Based Adversarial Learning for Unsupervised Domain Adaptation***
Yumin Zhang (Jinan University, China); Yajun Gao (Chinese Academy of Sciences University, China); Hongliu Li (University of Science and Technology of China, China); Ating Yin (Hunan University, China); Duzhen Zhang (Chinese Academy of Sciences, China); Xiuyi Chen (Baidu Inc & CASIA, China)

17:30 ***Semantic-Aware Mixup for Domain Generalization***
Chengchao Xu and Xinmei Tian (University of Science and Technology of China, China)

17:50 ***Adaptive Topological Graph Learning for Generalized Multi-View Clustering***
Wenjue He (Harbin Institute of Technology, Shenzhen, China); Zheng Zhang (Shenzhen Graduate School, Harbin Institute of Technology, China)

18:10 ***Extending Interpolation Consistency Training for Unsupervised Domain Adaptation***
Shayan Gharib and Arto Klami (University of Helsinki, Finland)

16:30 – 18:30
Virtual: Object and Defect Detection Using Neural Networks: Part 2
Day2_PM2_RmV1
Room: Virtual Room 1
Session Chair: Tao Zhang

16:30 ***Object Detection of Occlusion Point Cloud Based on Transformer***
Jing Zhou (Jianghan University, China); Jian Zhou (Jianghan University, China); TengXing Lin and Zixin Gong (Jianghan University, China)

16:50 ***A Multi-Correspondence Object Detection Algorithm Based on Keypoints***
Deqi Liu, Aimin Li, Mengfan Cheng, Xiaohan Liu and Dexu Yao (Qilu University of Technology, China)

17:10 ***RTOD-YOLO: Traffic Object Detection in UAV Images Based on Visual Attention and Re-Parameterization***
Xuesen Ma, Weixin Wei, Jindian Dong, Biao Zheng and Ji Ma (Hefei University of Technology, China)

17:30 ***Remote Sensing Image Object Detection by Fusing Multi-Scale Contextual Features and Channel Enhancement***
Xuesen Ma, Jindian Dong, Weixin Wei, Biao Zheng, Ji Ma and Tianbao Zhou (Hefei University of Technology, China)

17:50 ***An Anchor-Free Detector to Detect Small Objects***
Tingting Hu and Tao Zhang (Jiangnan University, China)

18:10 ***Out-Of-Scope Intent Detection with Supervised Deep Metric Learning***
Youwen Zhang (Hello Inc., China); Xudong Wang (& Hello Company, China); Linlin Wang (Hello Inc., China); Ke Yan (National University of Singapore, Singapore); Huan Chen (Hello Inc., China)

16:30 – 18:30
Virtual: Reinforcement Learning: Part 1
Day2_PM2_RmV2
Room: Virtual Room 2
Session Chair: HongZhi Hua

16:30 ***Q-SAT: Value Factorization with Self-Attention for Deep Multi-Agent Reinforcement Learning***
Xunhan Hu, Jian Zhao, Youpeng Zhao, Wengang Zhou and Houqiang Li (University of Science and Technology of China, China)

16:50 ***FastAct: A Lightweight Actor Compression Framework for Fast Policy Learning***
Hongjie Zhang (Sichuan Normal University & Sichuan Yuanzhigu Technology Co., Ltd., China); Haoming Ma (Sun Yat-Sen University, China); Zhenyu Chen (Sichuan Normal University, China)

17:10 ***Explicitly Learning Policy Under Partial Observability in Multiagent Reinforcement Learning***
Chen Yang (Institute of Automation, Chinese Academy of Sciences, China); Guangkai Yang (China); Hao Chen (University of Chinese Academy of Sciences, China); Junge Zhang (Institute of Automation, Chinese Academy of Sciences, China)

17:30 ***Interpretable and Effective Reinforcement Learning for Attacking Against Graph-Based Rumor Detection***
Yuefei Lyu and Xiaoyu Yang (Beijing University of Posts and Telecommunications, China); Jiaxin Liu and Sihong Xie (Lehigh University, USA); Philip Yu (University of Illinois at Chicago, USA); Xi Zhang (Beijing University of Posts and Telecommunications, China)

17:50 ***Building Decision Forest via Deep Reinforcement Learning***
HongZhi Hua, GuiXuan Wen and KaiGui Wu (Chongqing University, China)

18:10 ***Rethinking the Trigger-Injecting Position in Graph Backdoor Attack***
Jing Xu (Delft University of Technology, The Netherlands); Gorka Abad (Radboud University, The Netherlands); Stjepan Picek (TU Delft, The Netherlands)

16:30 – 18:30
Virtual: Neural Network Applications in Security
Day2_PM2_RmV3
Room: Virtual Room 3
Session Chair: Xin Lian and Rafia Rahim

16:30 ***LeanStereo: A Lean Stereo Network***
Rafia Rahim, Samuel Woerz and Andreas Zell (University of Tuebingen, Germany)

16:50 ***Automated Behavior Identification of Home Security Camera Traffic***
Shuhe Liu (Institute of Information Engineering, Chinese Academy of Sciences & School of Cyber Security, University of Chinese Academy of Sciences, China); Xiaolin Xu (CNCERT/CC, China); Zhefeng Nan (Institute of Information Engineering, Chinese Academy of Sciences, China & School of Cyber Security, University of Chinese Academy of Sciences, China)

17:10 ***AKD: Using Adversarial Knowledge Distillation to Achieve Black-Box Attacks***
Xin Lian, Zhiqiu Huang and Chao Wang (Nanjing University of Aeronautics and Astronautics, China)

17:30 ***General Adversarial Perturbation Simulating: Protect Unknown System by Detecting Unknown Adversarial Faces***
Hefei Ling and Feiran Sun (Huazhong University of Science and Technology, China); Jinyuan Zhang and Xiaorui Lin (Industrial and Commercial Bank of China, China); Jiazhong Chen, Ping Li and Qian Wang (Huazhong University of Science and Technology, China)

17:50 ***Detecting Cyber Attacks in Industrial Control Systems Using Spatio-Temporal Autoencoder***
Bin Lan and Yu Shunzheng (Sun Yat-Sen University, China)

18:10 ***What Causes a Driver's Attention Shift? A Driver's Attention-Guided Driving Event Recognition Model***
Pengcheng Du, Tao Deng and Fei Yan (Southwest Jiaotong University, China)

16:30 – 18:30
Virtual: Biomedical Applications of Neural Networks: Part 2
Day2_PM2_RmV4
Room: Virtual Room 4
Session Chairs: Anna Vettoruzzo and Stefano Fioravanti

16:30 ***Learnable Query Guided Representation Learning for Treatment Effect Estimation***
Chenchen Fan, Yixin Wang, Yahong Zhang, Wenli Ouyang, Sheng Shi, Wei Fan and Jianping Fan (Lenovo Research, China)

16:50 ***Multi-View Feature Fusion Based on Self-Attention Mechanism for Drug-Drug Interaction Prediction***
Hui Han (Qilu University of Technology(Shandong Academy of Sciences), China); Weiyu Zhang (13854198081, China); Xu Sun (Qilu University of Technology(Shandong Academy of Sciences), China); Wenpeng Lu (Qilu University of Technology, China)

17:10 ***Disease Diagnosis with Cost-Sensitive Grouped Features Based on Deep Reinforcement Learning***
Yikemaiti Sataer and Zhiqiang Gao (Southeast University, China); Xuelian Li (Nanjing University of Posts and Telecommunications, China)

17:30 ***Resilient Remote Heart Rate Measurement from Partially Masked Faces***
Xingjie Huang and Jianming Lv (South China University of Technology, China)

17:50 ***Denoise Enhanced Neural Network with Efficient Data Generation for Automatic Sleep Stage Classification of Class Imbalance***
Le Yu and Peiwang Tang (University of Science and Technology of China, China); Zhiguo Jiang and Xianchao Zhang (JiaXing University, China)

18:10 ***DPU-Net: A Transformer-CNN Serial Network for Renal Artery Segmentation in CT Urography***
Bei Li, Wenkang Fan, Mingxian Yang and Zhiyuan Liu (Xiamen University, China); Song Zheng and Jianhui Chen (Fujian Medical University Union Hospital, China); Yinran Chen (Xiamen University, China); Xiongbiao Luo (Nagoya University, Japan)

18:30 – 19:30
Competitions
Room: Arena 1B

18:30 – 19:30
Poster Session 2
Day2_Posters
Room: Hall 1
Session Chair: Akira Hirose

#1: Repr2Seq: A Data-To-Text Generation Model for Time Series
Yi Li, Yuxuan Gao, Jianyi Cai, Guoxiang Zheng, Hanlin Shi and Xiping Liu (Jiangxi University of Finance and Economics, China)

#2: Towards Understanding the Link Between Modularity and Performance in Neural Networks for Reinforcement Learning
Humphrey J Munn (The University of Queensland, Australia); Marcus Gallagher (University of Queensland, Australia)

#3: Evolution of Proxy Use in Neural Network Controllers for Crowd Modeling
Jin Huang and Yoonsuck Choe (Texas A&M University, USA)

#4: Market Making with Deep Reinforcement Learning from Limit Order Books
Hong Guo and Jianwu Lin (Tsinghua University, China); Fanlin Huang (Microsoft, China)

#5: Explainable Exclusion in the Life Insurance Using Multi-Label Classifier
Khanh Van Nguyen (University of Technology Sydney, Australia); Md Rafiqul Islam (University of Technology Sydney (UTS), Australia); Huan Huo (University of Technology Sydney, China); Peter Tilocca (Zurich Financial Services, Australia); Guandong Xu (University of Technology Sydney, Australia)

#6: Reputation-Aware Opportunistic Budget Optimization for Auction-Based Federation Learning
Xavier Tan and Wei Yang Bryan Lim (Nanyang Technological University & Alibaba-NTU Joint Research Institute, Singapore); Yu Han and Dusit Niyato (Nanyang Technological University, Singapore)

#7: Flexible Contribution Estimation Methods for Horizontal Federated Learning
Xiangjing Hu (Harbin Institute of Technology, Shenzhen, China); Congjian Luo (China); Dun Zeng (University of Electronic Science and Technology of China, China); Zenglin Xu (Harbin Institute of Technology Shenzhen, China); Ping Guo (Beijing Normal University, China); Irwin King (The Chinese University of Hong Kong, Hong Kong)

#8: Defense Against Reconstruction Attacks in Split Federated Learning Through Decreasing Correlation Between Inputs and Activations
Xingming Luo (Hainan University, China); Yaochi Zhao (Hainan Unitersity, China); ZhuHua Hu (Hainan University, China); Yanfei Zhu and Jiezhuo Zhong (Hainan Unitersity, China)

#9: Human-In-The-Loop Machine Learning for the Treatment of Pancreatic Cancer
Eduardo Mosqueira-Rey (Universidade da Coruña & CITIC, Spain); Alberto Pérez-Sánchez (Universidade da Coruña, Spain); Elena Hernández-Pereira (University of A Coruña, Spain); David Alonso-Ríos, José Bobes-Bascarán, Ángel Fernández-Leal and Vicente Moret-Bonillo (Universidade da Coruña, Spain); Yolanda Vidal-Ínsua and Francisca Vázquez-Rivera (Complejo Hospitalario CHUS, Spain)

#10: Understanding Depth Map Progressively: Adaptive Distance Interval Separation for Monocular 3d Object Detection
Xianhui Cheng and Shoumeng Qiu (Fudan University, China); Zhikang Zou (Baidu Inc., China); Jian Pu and Xiangyang Xue (Fudan University, China)

#11: MobileWeatherNet for LiDAR-Only Weather Estimation
Martim Pinto Silva and Diogo Carneiro (Bosch Car Multimedia, Portugal); João Fernandes (Unniversity of Porto, Portugal); Luis F. Teixeira (University of Porto, Portugal)

#12: Langevin Algorithms for Markovian Neural Networks and Deep Stochastic Control
Pierre Bras and Gilles Pagès (Sorbonne University, France)

#13: Potential-Based Credit Assignment for Cooperative RL-Based Testing of Autonomous Vehicles
Utku Ayvaz and Chih-Hong Cheng (Fraunhofer IKS, Germany); Hao Shen (TU Munich and Fortiss, Germany)

#14: Autonomous Recognition of Collective Motion Behaviours in Robotic Swarms from Video Using a Deep Neural Network
Noha Khattab (University of New South Wales, Australia); Shadi Abpeikar (University of New South Wales, Canberra, Australia); Kathryn Kasmarik and Matthew Garratt (University of New South Wales, Australia)

#15: Deep Q-Network Updates for the Full Action-Space Utilizing Synthetic Experiences
Wenzel Pilar von Pilchau and David Pätzel (University of Augsburg, Germany); Anthony Stein (Universität Hohenheim, Germany); Jörg Hähner (University of Augsburg, Germany)

#16: Improving Siamese Neural Networks with Border Extraction Sampling for the Use in Real-Time Network Intrusion Detection
Marek Pawlicki (Bydgoszcz University of Science and Technology & ITTI, Poland); Rafał Kozik (ITTI, Poland); Michal Choras (ITTI Ltd, Poland)

#17: PointCMT: An MLP-Transformer Network for Contrastive Learning of Point Representation
Chuyu Wang (SouthWest University, China); Xian-Feng Han and Guoqiang Xiao (Southwest University, China)

#18: RRR-Net: Reusing, Reducing, and Recycling a Deep Backbone Network
Haozhe Sun (University of Paris-Saclay, France); Isabelle M Guyon (Université Paris-Saclay & ChaLearn and Google, France); Felix Mohr (Universidad de La Sabana, Colombia); Hedi Tabia (IBISC, Paris Saclay University, France)

#19: Efficient Multi-Task Scene Analysis with RGB-D Transformers
Söhnke B. Fischedick, Daniel Seichter, Robin Schmidt, Leonard Rabes and Horst-Michael Gross (Ilmenau University of Technology, Germany)

#20: Network Based Contour Extraction for Inertial Confinement Fusion Images
Bradley T Wolfe, Michael Falato, Nga Nguyen-Fotiadis, Xinhua Zhang and Zhehui Wang (Los Alamos National Laboratory, USA)

#21: Application of Neural Networks in Beam Emission Spectroscopy Modelling
Azarakhsh Jalalvand (Princeton University, USA); Ors Asztalos, Mate Karacsonyi and Gergo Pokol (Budapest University of Technology and Economics, Hungary)

#22: Multimodal Prediction of Tearing Instabilities in a Tokamak
Jaemin Seo (Chung-Ang University, Korea (South)); Rory Conlin and Andy Rothstein (Princeton University, USA); SangKyeun Kim (Princeton Plasma Physics Laboratory, USA); Joseph Abbate, Azarakhsh Jalalvand and Egemen Kolemen (Princeton University, USA)

#23: Divisible Cell-Segmentation: A New Approach for Stroke Detection and Segmentation in CT Scans Using Deep Learning and Fine-Tuning
Luis Fabricio de Freitas Souza (UFC, Brazil); Joel Ramos Michaliszen Junior, Adriell Gomes Marques, Yasmin Osório Adelino Rodrigues, Guilherme Freire Brilhante Severiano, José Jerovane da Costa Nascimento and Pedro Pedrosa Rebouças Filho (IFCE, Brazil)

#24: Brain-Inspired Spiking Neural Network for Online Unsupervised Time Series Prediction
Biswadeep Chakraborty and Saibal Mukhopadhyay (Georgia Institute of Technology, USA)

#25: A Comparison of Temporal Encoders for Neuromorphic Keyword Spotting with Few Neurons
Mattias Nilsson (Luleå University of Technology, Sweden); Ton Juny Pina and Lyes Khacef (University of Groningen, The Netherlands); Foteini Liwicki (Luleå University of Technology, Sweden); Elisabetta Chicca (University of Groningen, The Netherlands); Fredrik Sandin (Luleå University of Technology, Sweden)

#26: Non-Standard Echo State Networks for Video Door State Monitoring
Peter Steiner (Technische Universität Dresden, Germany); Azarakhsh Jalalvand (Princeton University, USA); Peter Birkholz (Technische Universität Dresden, Germany)

#27: Controlling Dynamical Systems to Complex Target States Using Machine Learning: Next-Generation vs. Classical Reservoir Computing
Alexander Haluszczynski (Allianz Global Investors, Germany); Daniel Koeglmayr and Christoph Räth (DLR, Germany)

#28: New Insights on Homeostatic Activity-Dependant Structural Plasticity in Rate Based Neural Networks
Tanguy Cazalets (Ghent University, Belgium); Joni Dambre (Gent University, Belgium)

#29: Mosaic LSM: A Liquid State Machine Approach for Multimodal Longitudinal Data Analysis
Nikola Kasabov, Maryam Doborjeh Gholami Doborjeh, Sugam Budhraja and Balkaran Singh (Auckland University of Technology, New Zealand); Zohreh Gholami Doborjeh (The University of Auckland, New Zealand); Edmund Lai (Auckland University of Technology, New Zealand); Tan Ming Xuan Samuel (Nanyang Technological University, New Zealand); Wilson When Bin Goh (Nanyang Technological University, Singapore)

#30: A Fast Reservoir Computing Based Image Encryption Algorithm
Daniel Koeglmayr and Christoph Räth (DLR, Germany)

#31: Improved Classification and Interpretation of EEG Data Using NeuCube for STDP Learning and ESN as an On-Line Learning Classifier
Petia D. Koprinkova-Hristova (Bulgarian Academy of Sciences, Bulgaria); Nikola Kasabov and Simona Nedelcheva (IICT-Bulgarian Academy of Sciences, Bulgaria); Dimitar Penkov (IICT-Bulgarian Academy of Science, Bulgaria); Svetlozar Yordanov (IICT-Bulgarian Academy of Sciences, Bulgaria)

#32: Time-Domain Fading Channel Prediction Based on Spin-Wave Reservoir Computing
Jiaxuan Chen, Haotian Chen, Ryosho Nakane, Gouhei Tanaka and Akira Hirose (The University of Tokyo, Japan)

#33: Low-Power Lossless Image Compression on Small Satellite Edge Using Spiking Neural Network
Sayan Kahali (TCS Research, India); Sounak Dey (TCS, India); Chetan Sudhakar Kadway (Tata Consultancy Services, India); Arijit Mukherjee (TCS Research, India & Tata Consultancy Services, India); Arpan Pal (Tata Consultancy Services, India); Manan Suri (Indian Institute of Technology - Delhi, India)

#34: Self-Supervised Mental Disorder Classifiers via Time Reversal
Zafar Iqbal (Georgia State University & Translational Research in Neuroimaging and Data Science (TReNDS), USA); Usman Mahmood (Georgia State University, USA); Zening Fu (TReNDS, Georgia State University, USA); Sergey Plis (TReNDS Center & Georgia State University, USA)

#35: Low Power & Low Latency Cloud Cover Detection in Small Satellites Using On-Board Neuromorphic Processors
Chetan Sudhakar Kadway (Tata Consultancy Services, India); Sounak Dey (TCS, India); Arijit Mukherjee (TCS Research, India & Tata Consultancy Services, India); Arpan Pal (Tata Consultancy Services, India); Gilles Bézard (Brainchip Inc, France)

#36: TieFake: Title-Text Similarity and Emotion-Aware Fake News Detection
Quanjiang Guo, Zhao Kang and Ling Tian (University of Electronic Science and Technology of China, China); Zhouguo Chen (Science and Technology on Communication Security Laboratory, China)

#37: Active Learning for Video Classification with Frame Level Queries
Debanjan Goswami and Shayok Chakraborty (Florida State University, USA)

#38: Question Generation via Generative Adversarial Networks
Dong Liu, Yu Hong, Jianmin Yao and Guodong Zhou (Soochow University, China)

#39: Delaytron: Efficient Learning of Multiclass Classifiers with Delayed Bandit Feedbacks
Naresh Manwani and Mudit Agarwal (International Institute of Information Technology Hyderabad, India)

#40: Data Classification via Centrality Measures of Complex Networks
Janayna M. Fernandes and Guilherme Suzuki (Federal University of Uberlândia, Brazil); Liang Zhao (University of Sao Paulo, Brazil); Murillo G. Carneiro (Federal University of Uberlândia, Brazil)

#41: Mitigating Negative Transfer with Task Awareness for Sexism, Hate Speech, and Toxic Language Detection
Angel Felipe Magnossão de Paula (Universitat Politècnica de València & Pattern Recognition and Human Language Technology Research Center, Spain); Damiano Spina (RMIT University, Australia); Paolo Rosso (Universitat Politècnica de València, Spain)

#42: Light-Weight Deep Extreme Multilabel Classification
Arpan Dasgupta (International Institute of Informaion Technology, Hyderabad, India); Choudhury Istasis Mishra (International Institute of Information Technology, Hyderabad, India); Pratik Jawanpuria and Bamdev Mishra (Microsoft, India); Pawan Kumar (International Institute of Information Technology, Hyderabad, India)

#43: Continual Learning with Pretrained Backbones by Tuning in the Input Space
Simone Marullo (University of Florence, Italy); Matteo Tiezzi, Marco Gori and Stefano Melacci (University of Siena, Italy); Tinne Tuytelaars (Katholieke Universiteit Leuven, Belgium)

#44: Weight Compander: A Simple Weight Reparameterization for Regularization
Rinor Cakaj (University of Stuttgart & Robert Bosch GmbH, Germany); Jens Eric Markus Mehnert (Robert Bosch GmbH, Germany); Bin Yang (University of Stuttgart, Germany)

#45: FederatedNILM: A Distributed and Privacy-Preserving Framework for Non-Intrusive Load Monitoring Based on Federated Deep Learning
Shuang Dai (University of Exeter, United Kingdom (Great Britain)); Fanlin Meng (University of Manchester, United Kingdom (Great Britain)); Qian Wang (Durham University, USA); Xizhong Chen (Shanghai Jiao Tong University, China)

#46: A Cue-Based Context- and Speaker-Aware Model for Emotion Recognition in Conversation
Yiwei Liang and Guozheng Rao (Tianjin University, China)

#47: Energy Efficient Memory-Based Inference of LSTM by Exploiting FPGA Overlay
Krishnendu Guha (University College Cork, Ireland); Amit Ranjan Trivedi (University of Illinois at Chicago, USA); Swarup Bhunia (UFL, USA)

#48: AdaNAS: Adaptive Neural Architecture Search for Early Exit Neural Networks
Matteo Gambella and Manuel Roveri (Politecnico di Milano, Italy)

#49: CLUE: Cross-Layer Uncertainty Estimator for Reliable Neural Perception Using Processing-In-Memory Accelerators
Minah Lee, Anni Lu, Mandovi Mukherjee, Shimeng Yu and Saibal Mukhopadhyay (Georgia Institute of Technology, USA)

#50: Morphological Classification of Extragalactic Radio Sources Using Gradient Boosting Methods
Abdollah Masoud Darya (University of Sharjah, United Arab Emirates); Ilias Fernini (University of Sharjah & Sharjah Center for Astronomy and Space Sciences, United Arab Emirates); Marley Vellasco (Pontifícia Universidade Católica do Rio de Janeiro, Brazil); Abir Hussain (University of Sharjah, United Arab Emirates)

#51: Cd-HRNN: Content-Driven HRNN to Improve Session-Based Recommendation System
Sonal Dabral, Brijraj Singh, And Naoyuki Onoe (Sony Research India, India)

#52: Multi-View Clustering Using Barycentric Coordinate Representation
Xiaotong Qian (CY Cergy Paris Université, France); Lili Jin and Guénaël Cabanes (Université Sorbonne Paris Nord, France); Parisa Rastin (Université de Lorraine, France); Nistor Grozavu (CY Cergy Paris Université, France)

Wednesday, June 21, 2023

8:30 – 9:30
Plenary 1: Nikola K Kasabov
Room: Arena 1B
Session Chair: Khan Iftekharuddin

Neuroinformatics, Neural networks and Neurocomputers for Brain-inspired AI: Challenges and Opportunities

Nikola K Kasabov
Auckland University of Technology

The talk discusses briefly current challenges in AI, including: efficient learning of data (interactive, adaptive, life-long; transfer); interpretability and explainability; personalised predictive modelling and profiling; multiple modality of data (e.g. genetic, clinical, behaviour, cognitive, static, temporal, longitudinal); computational complexity; energy consumption; human-machine interaction.

Opportunities to address these challenges are presented through advancement in Neuroinformatics, Neural networks and Neurocomputers (the 3N). Neuroinformatics offer a tremendous amount of data and knowledge about how the human brain and the nervous system work. Many brain information processing principles can be now implemented in novel Neural network computational models, such as: sparseness of computation, leading to a much less computational complexity and a significant energy consumption; diversity in the NN architecture in terms of type of neurons and compartmentalisation of computations, which can improve results; cognitive computation, where bottom-up sensory information and top-down prior knowledge are used to speeds-up the learning process; life-long and transfer learning; interactive and reinforcement learning (rather than batch-mode); self-organisation (rather than pre-defined number of layers and neurons); evolving spatio-temporal knowledge and many more. Some of these principles have already been used in neural network models, such as SOM (Kohonen), ART (Grossberg), ECOS ([1,2]), spiking neural networks (SNN) (Maass), [3]. The latter ones have inspired the development of neuromorphic hardware chips and Neurocomputers, characterised by much low power consumption, massive parallelism and fast processing.

9:30 – 10:30
Coffee Break
Room: Hall 1

10:00 – 12:00
Federated Learning
Day3_AM_Rm1
Room: Arena 1B
Session Chair: Murray Patterson

10:00 ***Federated Learning via Decentralized Dataset Distillation in Resource-Constrained Edge Environments***
Rui Song (Fraunhofer IVI & Technical University of Munich, Germany); Dai Liu (Munich Technical University, Germany); Zhenyu Chen (Technical University of Munich, Germany); Andreas Festag (Technische Hochschule Ingolstadt & Fraunhofer Institute for Transportation and Infrastructure Systems IVI, Germany); Carsten Trinitis (TU Müncheng, Germany); Martin Schulz (Technical University of Munich, Germany); Alois Knoll (Technical University Munich Garching, Germany)**10:20** ***Private Data Synthesis from Decentralized Non-IID Data***
Muhammad Usama Saleem and Liyue Fan (University of North Carolina at Charlotte, USA)

10:40 ***MVMAFOL: A Multi-Access Three-Layer Federated Online Learning Algorithm for Internet of Vehicles***
Jieying Zhou, Junyao Zheng and Bokai Cao (Sun Yat-Sen University, China); Weigang Wu (Sun Yat-sen University, China)

11:00 ***Bio-Inspired Dual-Network Model to Tackle Statistical Heterogeneity in Federated Learning***
Adnan Ahmad, Vinh Loi Chau and Antonio Robles-Kelly (Deakin University, Australia); Shang Gao (Deakin University, Victoria, Australia); Longxiang Gao (Deakin University, Australia); Lianhua Chi (La Trobe University, Australia); Wei Luo (Deakin University, Australia)

11:20 ***FedRRA: Reputation-Aware Robust Federated Learning Against Poisoning Attacks***
Liping Yi, Xiaorong Shi, Wenrui Wang, Gang Wang and Xiaoguang Liu (Nankai University, China)

11:40 ***Empowering Pandemic Response with Federated Learning for Protein Sequence Data Analysis***
Prakash Chourasia, Zahra Tayebi, Sarwan Ali and Murray Patterson (Georgia State University, USA)

10:00 – 12:00
Health Risk Prediction and Medical Records
Day3_AM_Rm2
Room: Arena 1A
Session Chair: Enrico De Santis

10:00 ***Deep Imputation-Prediction Networks for Health Risk Prediction Using Electronic Health Records***
Yuxi Lorenzo Liu (Flinders University, Australia); Zhenhao Zhang (Northwest A&F University, China); Shaowen Qin (Flinders University, Australia)

10:20 ***NeuralHMM: A Deep Markov Network for Health Risk Prediction Using Electronic Health Records***
Yuxi Lorenzo Liu (Flinders University, Australia); Zhenhao Zhang (Northwest A&F University, China); Shaowen Qin (Flinders University, Australia)

10:40 ***A Comparison of Neural Word Embedding Language Models for Classifying Social Media Users in the Healthcare Context***
Enrico De Santis (University of Rome La Sapienza, Italy); Alessio Martino (LUISS University, Italy); Francesca Ronci (University of Rome La Sapienza, Italy); Antonello Rizzi (University of Rome "La Sapienza", Italy)

11:00 ***A Bidirectional Tree Tagging Scheme for Joint Medical Relation Extraction***
Xukun Luo, Weijie Liu, Meng Ma and Ping Wang (Peking University, China)

11:20 ***Stacked Attention-Based Networks for Accurate and Interpretable Health Risk Prediction***
Yuxi Lorenzo Liu (Flinders University, Australia); Zhenhao Zhang (Northwest A&F University, China); Campbell Thompson (University of Adelaide, Australia); Richard Leibbrandt and Shaowen Qin (Flinders University, Australia); Antonio Jimeno Yepes (RMIT University, Australia)

11:40 ***Classification of Coma Etiology Using Convolutional Neural Networks and Long-Short Term Memory Networks***
Sergio Baldo Junior (University of São Paulo, Brazil); Murillo G. Carneiro (Federal University of Uberlândia, Brazil); Joao-Batista Destro-Filho (Federal University of Uberlandia (UFU), Brazil); Liang Zhao (University of Sao Paulo, Brazil); Renato Tinós (Universidade de São Paulo (USP), Ribeirão Preto, Brazil)

10:00 – 12:00
Smart Energy Network with Machine Learning
Day3_AM_Rm3
Room: Foyer E
Session Chair: Yong Qin and Yi-Ling Chen

10:00 ***Long-Term Power Consumption Prediction with Two-Stage Clustering Framework***
Hsin-Chiao Wang and Yi-Ling Chen (National Taiwan University of Science and Technology, Taiwan)

10:20 ***Enhancing Wind Power Forecast Precision via Multi-Head Attention Transformer: An Investigation on Single-Step and Multi-Step Forecasting***
Md Rasel Sarkar and Sreenatha Anavatti (University of New South Wales, Australia); Tanmoy Dam (Saab-NTU Joint Lab, Nanyang Technological University - NTU Singapore, Singapore); Mahardikha Pratama (University of South Australia, Australia); Berlian Al Kindhi (Institut Teknologi Sepuluh Nopember, Indonesia)

10:40 ***Multi-Granularity Autonomous Intelligent Method for Operation Optimization of Integrated Coal Mine Energy Systems***
Yan Wang, Dunwei Gong and Xiaoyan Sun (China University of Mining and Technology, China)

11:00 ***CyFormer: Accurate State-Of-Health Prediction of Lithium-Ion Batteries via Cyclic Attention***
Zhiqiang Nie, Jiankun Zhao, Qicheng Li and Yong Qin (Nankai University, China)

11:20 ***Network Reconfiguration Aware Peer-To-Peer Ancillary Energy Trading Under Uncertainties***
Hongxu Huang (China University of Mining and Technology, China); L. P. Mohasha Isuru Sampath (NTU Singapore, India); Rui Liang (China University of Mining and Technology, China)

11:40 ***Feature Selection Using Complex Networks to Support Price Trend Forecast in Energy Markets***
Douglas Castilho (University of São Paulo & Federal Institute of South of Minas Gerais, Brazil); Moises Santos (University of São Paulo, Brazil); Renato Tinós (Universidade de São Paulo (USP), Ribeirão Preto, Brazil); Andre Carvalho (University of Sao Paulo, Brazil); Marcos Basile Saviano de Paula, Lucas Menezes Ladeira, Ewerton Guarnier and Donato da Silva Filho (Volt, Brazil); Danilo Yoshio Suiama, Edmur Andrade Macedo Junior and Lucas Penido Alipio (Auren, Brazil)

10:00 – 12:00
Multi-Agent Reinforcement Learning: Part 1
Day3_AM_Rm4
Room: Central Room B
Session Chair: Deepthi Kuttichira

10:00 ***Attentional Opponent Modelling for Multi-Agent Cooperation***
Siyang Tan (Chinese Aeronautical Establishment, China); Binqiang Chen (Beihang University, China)

10:20 ***Evolution Strategies Enhanced Complex Multiagent Coordination***
Yunfei Du, Yin Wang, Ya Cong, Weihao Jiang and Shiliang Pu (Hikvision Research Institute, China)

10:40 ***Causal Mean Field Multi-Agent Reinforcement Learning***
Hao Ma (Institute of Automation, Chinese Academy of Sciences, China); Zhiqiang Pu, Yi Pan and Boyin Liu (Institute of Automation Chinese Academy of Sciences, China); Junlong Gao and Guo Zhenyu (Alibaba Group, Hangzhou, China)

11:00 ***TLMIX: Twin Leader Mixing Network for Cooperative Multi-Agent Reinforcement Learning***
Yu Zhang (Qinghai University, Xining, Qinghai Province & Qinghai University, China); Pengyu Gao (Qiyuan Laboratory, China); Zhe Wu (Qiyuan Lab, China); Yusheng Jiang (Qinghai University, China); Junliang Xing (Tsinghau University, China); Pin Tao (Tsinghua University, China)

11:20 ***Learning Correlated Policies for Multi-Agent Cooperation***
Xiangsen Wang, Youfang Lin, Xiaoyang Yu, Shuo Zhang and Han Sheng (Beijing Jiaotong University, China)

11:40 ***Curriculum Learning Based Multi-Agent Path Finding for Complex Environments***
Cheng Zhao, Liansheng Zhuang, Yihong Huang and Haonan Liu (University of Science and Technology of China, China)

10:00 – 12:00
Text Understanding and Analysis Using Neural Networks: Part 1
Day3_AM_Rm5
Room: Central Room C
Session Chair: Constantine Kotropoulos

10:00 ***Multimodal Chinese Event Extraction on Text and Audio***
Zhang Xinlang, Zhongqing Wang and Peifeng Li (Soochow University, China)

10:20 ***Dual Hypergraph Features for Path Inference in Wikipedia Links***
Anastasia-Sotiria Toufa, Constantine Kotropoulos and Ioannis Tsingalis (Aristotle University of Thessaloniki, Greece)

10:40 ***Improving Chinese Spelling Correction by Ranking***
Junjia Feng, Shuai Wang, Wenbiao Yin and Lin Shang (Nanjing University, China)

11:00 ***WokeGPT: Improving Counterspeech Generation Against Online Hate Speech by Intelligently Augmenting Datasets Using a Novel Metric***
Sadaf MD Halim, Saquib Irtiza and Yibo Hu (The University of Texas at Dallas, USA); Latifur Khan (University of Texas, USA); Bhavani Thuraisingham (University of Texas at Dallas, USA)

11:20 ***Make BERT-Based Chinese Spelling Check Model Enhanced by Layerwise Attention and Gaussian Mixture Model***
Yongchang Cao, Liang He, Zhen Wu and Xinyu Dai (Nanjing University, China)

10:00 – 12:00
Neural Networks for Computer Vision: Part 1
Day3_AM_Rm6
Room: Room 5
Session Chair: Jen-Tzung

10:00 ***An End-To-End Robotic Visual Localization Algorithm Based on Deep Learning***
HongCheng Wang (Shanghai DianJi University, China); Niansheng Chen (Shanghai Dianji University, China); Guangyu Fan (Shanghai Dian Ji University, China); Yang Dingyu (Alibaba Group, China); Lei Rao (Shanghai Dian Ji University, China); Songlin Cheng (Shanghai Dianji University, China)

10:20 ***Layered Decoupled Complementary Networks for Multi-View Stereo***
Yongrong Cao, Bin Wang, Xing Zheng, Xueming Wang, Pan Li, Meining Jia, Jianchang Gong and LeYang Yang (Ningxia University, China)

10:40 ***Reinforcement Learning Framework to Simulate Short-Term Learning Effects of Human Psychophysical Experiments Assessing the Quality of Artificial Vision***
Na Min An (Korea Institute of Science and Technology & Korea Advanced Institute of Science and Technology, Korea (South)); Hyeonhee Roh and Sein Kim (Korea Institute of Science and Technology, Korea (South) & Korea University, Korea (South)); Jae Hun Kim (Korea Institute of Science and Technology, Korea (South)); Maesoon Im (Korea Institute of Science and Technology, Korea (South) & University of Science and Technology, Korea (South))

11:00 ***Multi Feature Representation and Aggregation Network for Accurate and Robust Visual Tracking***
Yijin Yang and Xiaodong Gu (Fudan University, China)

11:20 ***Variational Disentangled Attention and Regularization for Visual Dialog***
Jen-Tzung Chien and Hsiu-Wei Tien (National Yang Ming Chiao Tung University, Taiwan)

10:00 – 12:00
Neural Networks for Image Recognition
Day3_AM_Rm7
Room: Room 6
Session Chair: Khan Iftekharuddin and Stuti Chug

10:00 ***Attack Assessment and Augmented Identity Recognition for Human Skeleton Data***
Joseph G Zalameda, Megan Witherow and Alex Glandon (Old Dominion University, USA); Jose Aguilera (Amherst College, USA); Khan Iftekharuddin (Old Dominion University, USA)

10:20 ***Symbol Detection for Polarization Shift Keying Based on Quaternion Neural Networks***
Haotian Chen, Ryo Natsuaki and Akira Hirose (The University of Tokyo, Japan)

10:40 ***LocoMixer: A Local Context MLP-Like Architecture for Image Classification***
Zhiyong Chang (Peking University, China); Mingjun Yin (The University of Melbourne, China)

11:00 ***MFO-SENN: Self-Evolving Radial Basis Function Neural Network Using Moth Flame Optimization for Motor Imagery Task Classification***
Stuti Chug (Birla Institute of Technology & Science, Pilani, India)

11:20 ***TmfimCLIP: Text-Driven Multi-Attribute Face Image Manipulation***
Xudong Lou and Zhenyu Xu (Sichuan University, China)

11:40 ***Addressing Performance Inconsistency in Domain Generalization for Image Classification***
Jamie SJ Stirling and Noura Al Moubayed (Durham University, United Kingdom (Great Britain))

10:00 – 12:00
Special Session: The Coming of Age of Explainable AI (XAI) and Machine Learning
Day3_AM_Rm8
Room: Room 7
Session Chair: Qi Chen and José M Juárez

10:00 ***Counterfactual Explanations of Neural Network-Generated Response Curves***
Giorgio Morales and John W. Sheppard (Montana State University, USA)

10:20 ***Explaining Identity-Aware Graph Classifiers Through the Language of Motifs***
Alan Perotti (CENTAI Institute, Italy); André Panisson, Paolo Bajardi and Francesco Bonchi (CENTAI, Italy)

10:40 ***The Generalizability of Explanations***
Hanxiao Tan (TU Dortmund, Germany)

11:00 ***Maximum Entropy Baseline for Integrated Gradients***
Hanxiao Tan (TU Dortmund, Germany)

11:20 ***Backdoor Attack on Deep Neural Networks in Perception Domain***
Xiaoxing Mo and Leo Yu Zhang (Deakin University, Australia); Nan Sun (University of New South Wales, Canberra, Australia); Wei Luo (Deakin University, Australia); Shang Gao (Deakin University, Victoria, Australia)

11:40 ***Self-Explaining Neural Networks for Respiratory Sound Classification with Scale-Free Interpretability***
Zhao Ren (Leibniz University Hannover, Germany); Thanh Tam Nguyen (Griffith University, Australia); Mehdi Mohammad Zahed (Leibniz University Hannover, Germany); Wolfgang Nejdl (L3S Research Center, Germany)

10:00 – 12:00
Special Session: Deep Learning for Graphs (DL4G): Part 1
Day3_AM_Rm9
Room: Room 8
Session Chair: Davide Bacciu and Daniele Castellana

10:00 ***GAEISUMM: Unsupervised Graph-Based Summarization for Indian Languages***
Sireesha Vakada and Anudeep Ch (IIIT Hyderabad, India); Subbareddy Oota (Inria, France); Mounika Marreddy (IIIT Hyderabad, India); Radhika Mamidi (International Institute of Information Technology, Hyderabad, India)

10:20 ***Unsupervised Product Title Optimization Based on Search Behavior Knowledge in E-Commerce***
Shu Liu, Zhiqiang Ye and Jian Liao (Alibaba Company, China); Jinxin Wu (University of Sydney, China); Zhao Li (Zhejiang Lab, China)

10:40 ***Balancing Exploration and Exploitation in Hierarchical Reinforcement Learning via Latent Landmark Graphs***
Qingyang Zhang (China); Yiming Yang (Hong Kong); Jingqing Ruan (Chinese Academy of Sciences, China); Xuantang Xiong and Dengpeng Xing (China); Bo Xu (Institute of Automation, Chinese Academy of Sciences, China)

11:00 ***Learning Cooperative Policies with Graph Networks in Distributed Swarm Systems***
Tianle Zhang (Institute of Automation, Chinese Academy of Sciences, Beijing, China); Zhen Liu (Institute of Automation Chinese Academy of Sciences Beijing, China); Zhiqiang Pu (Institute of Automation Chinese Academy of Sciences, China); Jianqiang Yi (Institute of Automation, Chinese Academy of Sciences, China); Xiaolin Ai (Institute of Automation Chinese Academy of Sciences Beijing, China); Wanmai Yuan (Information Science Academy of CETC, China)

11:20 ***Graph Representation for Weakly-Supervised Spatio-Temporal Action Detection***
Dinesh Singh (IIT Mandi, India)

11:40 ***GCNH: A Simple Method for Representation Learning on Heterophilous Graphs***
Andrea Cavallo and Luca Vassio (Politecnico di Torino, Italy); Claas Grohnfeldt, Michele Russo and Giulio Lovisotto (Huawei Munich Research Center, Germany)

10:00 – 12:00
Virtual: Neural Network Applications: Part 1
Day3_AM_RmV1
Room: Virtual Room 1
Session Chair: Thu Nguyen

10:00 ***Data Augmentation Ensemble Module Based on Natural Guidance for X-Ray Prohibited Items Detection***
Yangcai Zhong (Beijing Normal University, China)

10:20 ***Multi-Branch Spatial-Temporal Decoupling Neural Network for Traffic Forecasting***
Hui Zheng, Yi Qian and Ruoxuan Zhu (Xi'an Jiaotong University, China); Xing Wang, Junlan Feng, Lin Zhu and Chao Deng (China Mobile Research Institute, China)

10:40 ***PCVAE: A Physics-Informed Neural Network for Determining the Symmetry and Geometry of Crystals***
Ke Liu (Zhejiang University & ZJU-Hangzhou Global Scientific and Technological Innovation Center, China); Shangde Gao and Kaifan Yang (Zhejiang University, China); Yuqiang Han (Zhejiang University & ZJU-Hangzhou Global Scientific and Technological Innovation Center, China)

11:00 ***Improve Robustness of Graph Neural Networks: Multi-Hop Neighbors Meet Homophily-Based Truncation Defense***
Yujie Gu, Huiyan Sun, Yansong Wang and Haobo Shi (Jilin University, China)

11:20 ***MocGCL: Molecular Graph Contrastive Learning via Negative Selection***
Jinhao Cui and Heyan Chai (Harbin Institute of Technology, Shenzhen, China); Yanbin Gong (The Hong Kong University of Science and Technology, China); Ye Ding (Dongguan University of Technology, China); Zhongyun Hua and Cuiyun Gao (Harbin Institute of Technology, Shenzhen, China); Qing Liao (Harbin Institute of Technology（Shenzhen）, China)

11:40 ***Cost-Effective Modality Selection for Video Popularity Prediction***
Yang Liu, Mengyu Yang, Ye Tian, Zhang Lanshan, Xirong Que and Wendong Wang (Beijing University of Posts and Telecommunications, China)

10:00 – 12:00
Virtual: Neural Network Models: Part 2
Day3_AM_RmV2
Room: Virtual Room 2
Session Chair: Hari Mohan Pandey

10:00 ***A Bio-Inspired Computational Astrocyte Model for Spiking Neural Networks***
Jacob Kiggins (Rochester Institute of Technology, USA); J. David Schaffer (Binghamton University, USA); Cory Merkel (Rochester Institute of Technology, USA)

10:20 ***A Low Power and Low Latency FPGA-Based Spiking Neural Network Accelerator***
Hanwen Liu and Yi Chen (University of Electronic Science and Technology of China, China); Zihang Zeng (China); Malu Zhang (University of Electronic Science and Technology of China, China); Hong Qu (University of Electronic Science and Technology of China, USA)

10:40 ***Combining Datasets to Improve Model Fitting***
Thu Nguyen (Simula Metropolitan, Norway); Rabindra Khadka (Oslo Metropolitan University, Norway); Nhan Phan (University of Science, Vietnam); Anis Yazidi (Oslo Metropolitan University, Norway); Pål Halvorsen (Simula Research Laboratory & Department of Informatics, University of Oslo, Norway); Michael Alexander Riegler (Simula Research Laboratory, Norway)

11:00 ***Risk Scenario Generation for Autonomous Driving Systems Based on Scenario Evaluation Model***
Tong Wang (National Key Laboratory of Science and Technology on Information System Security, China); Xiaohui Kuang (Academy of Military Science, China); Huan Deng and Taotao Gu (National Key Laboratory of Science and Technology on Information System Security, China); Wei Kong (Academy of Military Sciences, China); Jianwen Tian (Institute of System Engineering, Academy of Military Science, China); Gang Zhao (National Key Laboratory of Science and Technology on Information System Security, China)

11:20 ***Rumor Detection Based on Depth and Breadth with Tree-Structured Recursive Neural Networks***
Xiang Zhang and Tao Sun (Qilu University of Technology(Shandong Academy of Sciences)); Chunyan Yang (Shandong Urban Construction Vocational College, China); Zihao Zhang, Xinyan Yin, Mengli Su, Zhibang Quan and Jishu Wei (Qilu University of Technology(Shandong Academy of Sciences))

11:40 ***Finding, and Countering, Future Resistance Using Bacterial Antibiotic Adversarial Genetic Algorithm (BAAGA)***
Cory Kromer-Edwards and Suely Oliveira (University of Iowa, USA)

10:00 – 12:00
Virtual: Neural Networks for Video Processing: Part 3
Day3_AM_RmV3
Room: Virtual Room 3
Session Chair: Yiran Huang

10:00 ***DTH Using GNN: Detecting and Tracking Human in Videos Using GNN***
Sameh Kouni (ISIMG, Tunisia); Nozha Jlidi (RTIM, Tunisia)

10:20 ***Towards Spatio-Temporal Collaborative Learning: An End-To-End Deepfake Video Detection Framework***
Wenxuan Guo, Shuo Du, Huiyuan Deng, Lin Feng and Zikang Yu (Dalian University of Technology, China)

10:40 ***Learning Unified Video-Language Representations via Joint Modeling and Contrastive Learning for Natural Language Video Localization***
Chenhao Cui and Xinnian Liang (Beihang University, China); Shuangzhi Wu (Bytedance, China); Zhoujun Li (Beihang University, China)

11:00 ***Video-Based Red Panda Individual Identification by Adaptively Aggregating Discriminative Features***
Lei Li (Sichuan University, China); Mengnan He, Pengcheng Wu and Peng Liu (Chengdu Research Base of Giant Panda Breeding, China); Ke Huang (Huaan Vision Technology Co., Ltd, China); Fan Pan (Sichuan University, China); Peng Chen (Chengdu Research Base of Giant Panda Breeding, China); Qijun Zhao (Sichuan University & Tibet University, China)

11:20 ***Deep Learning for Effective Gender Classification of Tasmania Giant Crabs***
Jianping Yao, Son N Tran and Lianxue Zhang (The University of Tasmania, Australia); Jiaxin Ye (The University of Tasmania, Vietnam); Scott Hadley and Ananda Maiti (The University of Tasmania, Australia)

11:40 ***X-MLP: A Patch Embedding-Free MLP Architecture for Vision***
Xinyue Wang, Zhicheng Cai and Chenglei Peng (Nanjing University, China)

10:00 – 12:00
Virtual: Transformers: Theory and Applications
Day3_AM_RmV4
Room: Virtual Room 4
Session Chair: Anjie Peng and Zhaokun Zhou

10:00 ***TRMER: Transformer-Based End to End Printed Mathematical Expression Recognition***
Zhaokun Zhou (Peking University, China); Ji Shuai Jian (China); Yuqing Wang, Zhenyu Weng and Yuesheng Zhu (Peking University, China)

10:20 ***UGTransformer: Unsupervised Graph Transformer Representation Learning***
Lixiang Xu (Germany, Germany); Yuanyan Tang (University of Macau, China); Haifeng Liu, Qingzhe Cui and Li Ning (Hefei University, China); Bin Luo (Anhui University, China); Chen Yan (Hefei University, China)

10:40 ***A Novel End-To-End Transformer for Scene Graph Generation***
Chengkai Ren (Zhejiang University, China); Xiuhua Liu (Peking University, China); Mengyuan Cao (Intelligent Science and Technology Academy of CASIC, China); Jian Zhang and Hongwei Wang (Zhejiang University, China)

11:00 ***Visual and Linguistic Double Transformer Fusion Model for Multimodal Tweet Classification***
Jinyan Zhou and Xingang Wang (Qilu University of Technology, China); Ning Liu (China University of Mining and Technology, China); Xiaoyu Liu, Jiandong Lv, Xiaomin Li, Hong Zhang and Rui Cao (Qilu University of Technology, China)

11:20 ***User Recognition of Devices on the Internet Based on Heterogeneous Graph Transformer with Partial Labels***
Yimo Ren (Institute of Information Engineering, Chinese Academy of Sciences, China); Jinfa Wang, Hong Li and Hongsong Zhu (Institute of Information Engineering, Chinese Academy of Sciences, China); Limin Sun (Institute of Information Engineering, China Academy of Science, Beijing, China)

11:40 ***Towards Infrared Human Pose Estimation via Transformer***
Zhilei Zhu, Wanli Dong, Xiaoming Gao and Anjie Peng (Southwest University of Science and Technology, China)

12:00 – 13:00
Lunch on your own

13:00 – 15:00
Emotion Recognition with Neural Networks
Day3_PM1_Rm1
Room: Arena 1B
Session Chair: Dongdong Li

13:00 ***Mixed Entropy Down-Sampling Based Ensemble Learning for Speech Emotion Recognition***
Zhengji Xuan, Dongdong Li, Zhe Wang and Hai Yang (East China University of Science and Technology, China)

13:20 ***Cross-Modal Diversity-Based Active Learning for Multi-Modal Emotion Estimation***
Yifan Xu, Lubin Meng and Ruimin Peng (Huazhong University of Science and Technology, China); Yingjie Yin, Jingting Ding and Liang Li (Ant Group, China); D. Wu (Huazhong University of Science and Technology, China)

13:40 ***A Multiscale Dynamic Temporal Convolution Network for Continuous Dimensional Emotion Recognition***
Min Hu, Jialu Sun and Xiaohua Wang (Hefei University of Technology, China); Ning An (Hefei Universit of Technology, China)

14:00 ***Multi-Level Feature Joint Learning Methods for Emotional Speaker Recognition***
Zhongliang Zeng, Dongdong Li, Zhe Wang and Hai Yang (East China University of Science and Technology, China)

14:20 ***Emotion-Cause Pair Extraction via Local Edge-Feature Enhanced Graph Neural Network***
Linlin Zong, Qin Xin, JingLin Zhang, Xianchao Zhang and Bo Xu (Dalian University of Technology, China)

14:40 ***Manually Crafted Chinese Text Corpus for Text Emotion Recognition***
Bo Gao (Nanjing Tech University, China); Fan Zhang (Zhejiang University, China)

13:00 – 15:00
Meta-Learning and Ensembles
Day3_PM1_Rm2
Room: Arena 1A
Session Chair: Simon Klüttermann

13:00 ***Meta-Learning from Multimodal Task Distributions Using Multiple Sets of Meta-Parameters***
Anna Vettoruzzo, Mohamed-rafik Bouguelia and Thorsteinn Rognvaldsson (Halmstad University, Sweden)

13:20 ***Hybrid Domain Meta-Learning Network for Face Forgery Detection and Localization in Deepfakes***
Hongjie Zhao, Beibei Liu, Yongjian Hu and Jicheng Li (South China University of Technology, China); Chang-Tsun Li (University of Deakin, Australia)

13:40 ***Forecasting Early with Meta Learning***
Shayan Jawed, Kiran Madhusudhanan and Vijaya Krishna Yalavarthi (University of Hildesheim, Germany); Lars Schmidt-Thieme (Universität Hildesheim, Germany)

14:00 ***Online Automated Machine Learning for Class Imbalanced Data Streams***
Shuo Wang and Zhaoyang Wang (University of Birmingham, United Kingdom (Great Britain))

14:20 ***A Robust Ensemble Regression Model for Reconstructing Genetic Networks***
Hasini Nakulugamuwa Gamage, Madhu Chetty and Suryani Lim (Federation University, Australia); Jennifer Hallinan (BioThink Pty Ltd, Australia); Huy Nguyen (Federation University, Australia)

14:40 ***Evaluating and Comparing Heterogeneous Ensemble Methods for Unsupervised Anomaly Detection***
Simon Klüttermann and Emmanuel Müller (TU Dortmund, Germany)

13:00 – 15:00
Time-Series Analysis Using Neural Networks
Day3_PM1_Rm3
Room: Foyer E
Session Chair: Khan Iftekharuddin and Saima Zahin Farhana Absar

13:00 ***Neural Time-Invariant Causal Discovery from Time Series Data***
Saima Absar (University of Arkansas, USA); Yongkai Wu (Clemson University, USA); Lu Zhang (University of Arkansas, USA)

13:20 ***Financial Time Series Data Prediction by Combination Model Adaboost-KNN-LSTM***
Heng Zhao (ShenZhen Technology University, China)

13:40 ***Uncertainty Aware Deep Learning for Fault Prediction Using Multivariate Time Series Signals***
Md Monibor Rahman (Old Dominion University, USA); Lasitha Vidyaratne (Hitachi America Ltd., USA); Adam Carpenter and Christopher Tennant (Jefferson Lab, USA); Khan Iftekharuddin (Old Dominion University, USA)

14:00 ***Time Series Adaptation Network for Sensor-Based Cross Domain Human Activity Recognition***
Shijie Wen, Yiqiang Chen, Yuan Ma, Shuai Guo and Yang Gu (Institute of Computing Technology, Chinese Academy of Sciences, China); Xin Qin (University of Chinese Academy of Sciences, China); Piu Chan (Xuanwu Hospital of Capital Medical University, China)

14:20 ***Automatic Feature Engineering for Time Series Classification: Evaluation and Discussion***
Aurélien Renault, Alexis Bondu and Vincent Lemaire (Orange Labs, France); Dominique Gay (Université de La Réunion, Reunion)

13:00 – 15:00
Multi-Agent Reinforcement Learning: Part 2
Day3_PM1_Rm4
Room: Central Room B
Session Chair: Ponnuthurai Nagaratnam Suganthan

13:00 ***Interpretability for Conditional Coordinated Behavior in Multi-Agent Reinforcement Learning***
Yoshinari Motokawa and Toshiharu Sugawara (Waseda University, Japan)

13:20 ***Effects of Spectral Normalization on Multi-Agent Reinforcement Learning***
Kinal Mehta (IIIT Hyderabad, India); Anuj Mahajan (University of Oxford, USA); Pawan Kumar (International Institute of Information Technology, Hyderabad, India)

13:40 ***Advantage Constrained Proximal Policy Optimization in Multi-Agent Reinforcement Learning***
Weifan Li and Yuanheng Zhu (Chinese Academy of Sciences, Institute of Automation, China); Dongbin Zhao (Chinese Academy of Sciences, China)

14:00 ***Curiosity-Driven Exploration for Cooperative Multi-Agent Reinforcement Learning***
Fanchao Xu and Tomoyuki Kaneko (University of Tokyo, Japan)

14:20 ***SEA: A Spatially Explicit Architecture for Multi-Agent Reinforcement Learning***
Dapeng Li (& Institute of Automation, Chinese Academy of Sciences, China); ZhiWei Xu, Bin Zhang and GuoLiang Fan (Chinese Academy of Sciences, China)

14:40 ***Variational Skill Embeddings for Meta Reinforcement Learning***
Jen-Tzung Chien and Weiwei Lai (National Yang Ming Chiao Tung University, Taiwan)

13:00 – 15:00
Text Understanding and Analysis Using Neural Networks: Part 2
Day3_PM1_Rm5
Room: Central Room C
Session Chairs: Yasser Khalafaoui and Timo Lohrenz

13:00 ***Solving Math Word Problems Following Logically Consistent Template***
Zeyu Huang, Xiaofeng Zhang, Jun Bai, Wenge Rong, Yuanxin Ouyang and Zhang Xiong (Beihang University, China)

13:20 ***Linguistic Feature Injection for Efficient Natural Language Processing***
Stefano Fioravanti (University of Siena, Italy); Andrea Zugarini (Expert.ai & University of Siena, Italy); Francesco Giannini (University of Siena, Italy); Leonardo Rigutini (Expert.ai, Italy); Marco Maggini and Michelangelo Diligenti (University of Siena, Italy)

13:40 ***RulePG: Syntactic Rule-Enhanced Paraphrase Generation***
Jian Lan, Mingfeng Xue and Jiancheng Lv (Sichuan University, China)

14:00 ***Discourse Parsing on Multi-Granularity Interaction***
Weihao Liu, Yaxin Fan, Xiaomin Chu, Peifeng Li and Qiaoming Zhu (Soochow University, China)

14:20 ***Self-Calibrated U-Net for Document Segmentation***
Iago Richard Rodrigues and Leylane Graziele Ferreira da Silva (Universidade Federal de Pernambuco, Brazil); David L Macêdo (Federal University of Pernambuco, Brazil); Cleber Zanchettin (Universidade Federal de Pernambuco, Brazil); Patricia Takako Endo (Universidade de Pernambuco, Brazil); Djamel Hadj Sadok (Federal University of Pernambuco, Brazil)

14:40 ***Enhancing Discriminative Ability Among Similar Classes with Guidance of Text-Image Correlation for Unsupervised Domain Adaptation***
Yu-won Lee, Myeong-Seok Oh, Ho-Joong Kim and Seong Whan Lee (Korea University, Korea (South))

13:00 – 15:00
Neural Networks for Computer Vision: Part 2
Day3_PM1_Rm6
Room: Room 5
Session Chair: Lina Sun

13:00 ***Unsupervised Graph Convolutional Hashing for Cross-Modal Retrieval with Vision-Language Model***
Lina Sun (Chongqing Normal University, China); Yewen Li (Chongqing Normal University); Dong Yumin (Chongqing Normal University, China)

13:20 ***A Generative Approach to Audio-Visual Generalized Zero-Shot Learning: Combining Contrastive and Discriminative Techniques***
Qichen Zheng and Jie Hong (Australian National University, Australia); Moshiur Farazi (Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia)

13:40 ***CycleSAR: SAR Image Despeckling as Unpaired Image-To-Image Translation***
Francesco Lattari, Vincenzo Santomarco and Riccardo Santambrogio (Politecnico di Milano, Italy); Alessio Rucci (TRE ALTAMIRA S. R. L., Italy); Matteo Matteucci (Politecnico di Milano, Italy)

14:00 ***Patch-Wise Mixed-Precision Quantization of Vision Transformer***
Junrui Xiao, Zhikai Li and Lianwei Yang (University of Chinese Academy of Sciences, China); Qingyi Gu (Chinese Academy of Sciences, China)

14:20 ***Engagement Recognition in Online Learning Based on an Improved Video Vision Transformer***
Zi jian Guo, Zhuoyi Zhou, Jiahui Pan and Yan Liang (South China Normal University, China)

14:40 ***Agile Gesture Recognition for Capacitive Sensing Devices: Adapting On-The-Job***
Ying Liu (University of Leicester & Tangi0 Ltd., United Kingdom (Great Britain)); Liucheng Guo (Tangi0 Ltd, United Kingdom (Great Britain)); Valeri A. Makarov (Universidad Complutense de Madrid, Russia); Yuxiang Huang, Alexander Gorban and Evgeny Mirkes (University of Leicester, United Kingdom (Great Britain)); Ivan Y Tyukin (King's College London, United Kingdom (Great Britain))

13:00 – 15:00
Neural Network Applications in Image and Data Processing
Day3_PM1_Rm7
Room: Room 6
Session Chair: Khan Iftekharuddin

13:00 ***Neural-Network Model for Linear MHD Stability Analysis of Tokamak Edge Pedestals***
Chweeho Heo (Seoul National University, Korea (South)); Boseong Kim (Korea Institute of Fusion Energy & Seoul National University, Korea (South)); Ohjin Kwon (Deagu University, Korea (South)); Yong-Su Na (Seoul National University, Korea (South))

13:20 ***Multi-Truth Discovery While Being Aware of Unbalanced Data Distribution***
Xiu Susie Fang (Donghua University, China); Quan Z. Sheng (Macquarie University, Australia); Guohao Sun and Shan Chang (Donghua University, China); Hongya Wang (Donghua University); Jian Yang (Macquarie University, Australia)

13:40 ***High-Throughput Privacy-Preserving GRU Network with Homomorphic Encryption***
Zeyu Wang (The University of Tokyo, Japan); Makoto Ikeda (University of Tokyo Japan, Japan)

14:00 ***Anime Character Identification and Tag Prediction by Multimodality Modeling: Dataset and Model***
Fan Yi (Fudan University, China); Jiaxiang Wu (China); Minyi Zhao (Fudan University, China); Shuigeng Zhou (Fudan University, Shanghai, China)

14:20 ***Grid Feature Jigsaw for Self-Supervised Image Clustering***
Zijie Song, Zhenzhen Hu and Richang Hong (Hefei University of Technology, China)

14:40 ***Thermal Gait Dataset for Deep Learning-Oriented Gait Recognition***
Fatma Youssef (Egypt-Japan University of Science and Technology, Egypt); Ahmed El-Mahdy (Egypt-Japan University for Science and Technology, Egypt); Tetsuji Ogawa (Waseda University, Japan); Walid Gomaa (Egypt Japan University of Science and Technology, Egypt)

13:00 – 15:00
Neural Networks in Law and Tracking
Day3_PM1_Rm8
Room: Room 7
Session Chair: Amanda Maria Horzyk

13:00 ***Learn to Encode Heterogeneous Data: A Heterogeneous Aware Network for Multi-Future Trajectory Prediction***
Zheng Yang (Xidian University, China); Bing Han (VIPS Lab, School of Electronic Engineering, Xidian University, China); Weiming Chen and Xinbo Gao (Xidian University, China)

13:20 ***Staged Depthwise Correlation and Feature Fusion for Siamese Object Tracking***
Dianbo Ma and Jianqiang Xiao (Kanazawa University, Japan); Ziyan Gao (Japan Advanced Institute of Science and Technology, Japan); Satoshi Yamane (Kanazawa University, Japan)

13:40 ***Legal Judgment Prediction via Prior Knowledge and Subtasks Dependencies***
Hengzhi Li, Shubin Cai and Zhong Ming (Shenzhen University, China)

14:00 ***DccGraph: Detecting Criminal Communities with Augmented Criminal Network Construction and Graph Neural Network***
Yuan zhe Yang, Li Yang, Lingwei Li, Xiaoxiao Ma and Lei Yu (Institute of Software Chinese Academy of Sciences, China); Chun Zuo (Sinosoft Company Limited, China)

14:20 ***Automatic Keyphrase Generation for Brazilian Legal Information Retrieval***
Kenzo M Sakiyama (Universidade de São Paulo & Instituto de Ciências Matemáticas e de Computação, Brazil); Roseli Romero (University of São Paulo, Brazil); Rodrigo Frassetto Nogueira (Universidade de Campinas, Brazil)

14:40 ***How AI Affects Our Understanding of Musical Works That Should Be Protected by Copyright***
Amanda Maria Horzyk (University of Sussex & University of Edinburgh, United Kingdom (Great Britain))

13:00 – 15:00
Special Session: Deep Learning for Graphs (DL4G): Part 2
Day3_PM1_Rm9
Room: Room 8
Session Chair: Davide Bacciu and Daniele Castellana

13:00 ***Triplet Contrastive Periodical Siamese Graph Networks for Travel Time Estimation***
Alfateh M. Tag Elsir, Khaled Alkilane and Yanming Shen (Dalian University of Technology, China)

13:20 ***Graph Learning by Dynamic Sampling***
Luca Hermes and Aleksei Liuliakov (University of Bielefeld, Germany); Malte Schilling (University of Münster, Germany)

13:40 ***On the Use of Aggregation Functions for Semi-Supervised Network Embedding***
Marcelo Isaias de Moraes, Junior and Ricardo Marcondes Marcacini (University of São Paulo, Brazil)

14:00 ***Cell Attention Networks***
Lorenzo Giusti, Claudio Battiloro, Lucia Testa and Paolo Di Lorenzo (Sapienza University of Rome, Italy); Stefania Sardellitti (University of Rome La Sapienza, Italy); Sergio Barbarossa (Sapienza University of Rome, Italy)

14:20 ***MEGA: Explaining Graph Neural Networks with Network Motifs***
Feng Ding, Naiwen Luo, Shuo Yu and Tingting Wang (Dalian University of Technology, China); Feng Xia (RMIT University, Australia)

14:40 ***Iterative Fusion Method Based on Heterogeneous Graph Neural Network for Entity Alignment***
Zirui Zhang, Fanfang Meng, Yuanhui Meng, Xiaoxia Liu and Benhui Chen (Dali University, China)

13:00 – 15:00
Virtual: Neural Network Training Strategies: Part 1
Day3_PM1_RmV1
Room: Virtual Room 1
Session Chair: Ke Song and Byron Mason

13:00 ***Discriminating Information of Modality Contributions Network by Gating Mechanism and Multi-Task Learning***
Qiongan Zhang and Lei Shi (Shandong Normal University, China); Pei-Yu Liu (Shangdong Normal University, China); Liancheng Xu (Shandong Normal University, China)

13:20 ***Non-Exemplar Class-Incremental Learning via Dual Augmentation and Dual Distillation***
Ke Song, Quan Xia and Zhaoyong Qiu (Northwestern Polytechnical University, China)

13:40 ***Prototypical Contrastive Learning for Domain Adaptive Semantic Segmentation***
Quansheng Liu (University of Science and Technology, China); Chengdao Pu (University of Science and Technology of China, China); Fang Gao (Guangxi University, China); Jun Yu (University of Science and Technology of China, China)

14:00 ***Filter-Based Online Neuro-Fuzzy Model Learning Using Noisy Measurements***
Wen Gu (Loughborough University, United Kingdom (Great Britain)); Jianglin Lan (University of Glasgow, United Kingdom (Great Britain)); Byron Mason (Loughborough University, United Kingdom (Great Britain))

14:20 ***CGDC-LSTM: A Novel Hybrid Neural Network Model for MOOC Dropout Prediction***
Yuhang Zhou (Beijing Information Science and Technology University, China); Ke Niu (Beijing Information Science and Technology University); Haoyi Lv (University of Science and Technology of China, China); Guoqiang Lu (Beijing Information Science and Technology University, China); Yijie Pan (Tsinghua University & EIT Institute for Advanced Study, China)

14:40 ***Multi-Task Scheduling with Dependencies in Heterogeneous Edge Arithmetic Networks***
Weibang Li (Southwest Minzu University, China); Ling Li (University of Electronic Science and Technology of China, China)

13:00 – 15:00
Virtual: Neural Networks for Security and Law
Day3_PM1_RmV2
Room: Virtual Room 2
Session Chair: Li Dong

13:00 ***Gradient Sign Inversion: Making an Adversarial Attack a Good Defense***
Xiaojian Ji, Li Dong and Rang-ding Wang (Ningbo University, China); Diqun Yan (University of Ningbo, China); Yin Yang (Geely Auto Central Research Institute, China); Jinyu Tian (Macau University of Science and Technology, China)

13:20 ***GLQA: A Generation-Based Method for Legal Question Answering***
Weiqi Zhang, Hechuan Shen, Qian Wang, Tianyi Lei, Xu Wang and Dezhong Peng (Sichuan University, China)

13:40 ***Leveraging Task Dependencies and Label Constraints for Legal Judgment Prediction***
Wei Li and Li Li (Southwest University, China)

14:00 ***Exploring Quantum Machine Learning for Explainable Malware Detection***
Giovanni Ciaramella (Institute for Informatics and Telematics, National Research Council of Italy (CNR), Italy); Francesco Mercaldo (Consiglio Nazionale delle Ricerche, Italy); Fabio Martinelli (CNR-IIT, Italy); Antonella Santone (University of Molise, Italy)

14:20 ***Fighting Attacks on Large Character Set CAPTCHAs Using Transferable Adversarial Examples***
Yucheng Fu, Guoheng Sun, Han Yang, Juntian Huang and Haizhou Wang (Sichuan University, China)

13:00 – 15:00
Virtual: Reinforcement Learning: Part 2
Day3_PM1_RmV3
Room: Virtual Room 3
Session Chair: Jiao Huang and Kele Xu

13:00 ***Underexplored Subspace Mining for Sparse-Reward Cooperative Multi-Agent Reinforcement Learning***
Yang Yu, Qiyue Yin and Junge Zhang (Institute of Automation, Chinese Academy of Sciences, China); Hao Chen (University of Chinese Academy of Sciences, China); Kaiqi Huang (Chinese Academy of Sciences, China)

13:20 ***Temporal Inconsistency-Based Intrinsic Reward for Multi-Agent Reinforcement Learning***
Shaoqi Sun and Kele Xu (National University of Defense Technology, China)

13:40 ***T3S: Improving Multi-Task Reinforcement Learning with Task-Specific Feature Selector and Scheduler***
Yuanqiang Yu, Tianpei Yang, Yongliang Lv, Yan Zheng and Jianye Hao (Tianjin University, China)

14:00 ***Accelerating Self-Imitation Learning from Demonstrations via Policy Constraints and Q-Ensemble***
Chao Li (Institute of Software Chinese Academy of Sciences, China); Fengge Wu and Junsuo Zhao (Chinese Academy of Sciences, China)

14:20 ***Offline Reinforcement Learning with Uncertainty Critic Regularization Based on Density Estimation***
Chao Li (Institute of Software Chinese Academy of Sciences, China); Fengge Wu and Junsuo Zhao (Chinese Academy of Sciences, China)

14:40 ***QVDDPG: QV Learning with Balanced Constraint in Actor-Critic Framework***
Jiao Huang, Jifeng Hu and Luheng Yang (Jilin University, China); Zhihang Ren (China FAW Group Corporation, China); Hechang Chen and Bo Yang (Jilin University, China)

13:00 – 15:00
Virtual: Feature Extraction: Part 2
Day3_PM1_RmV4
Room: Virtual Room 4
Session Chair: Ashfaqur Rahman

13:00 ***Feature Decoupling in Self-Supervised Representation Learning for Open Set Recognition***
Jingyun Jia (Baidu, USA); Philip Chan (Florida Tech, USA)

13:20 ***FEAMNet: Light Field Depth Estimation Network Based on Feature Extraction and Attention Mechanism***
Yunming Liu, Yuxuan Pan, Kaiyue Luo, Yu Liu and Lin Zhang (Beijing University of Posts and Telecommunications, China)

13:40 ***Weighted Keywords-Guided Feature Extraction and Reasoning Network for Visual Grounding***
Guangqi Zhu (Beijing University of Post and Telecommunications); Xingxian Liu, Yunling Feng and Jian Xu (Beijing University of Posts and Telecommunications, China); Yajing Xu (Beijing University of Posts & Telecommunications, China)

14:00 ***Causal Visual Feature Extraction for Image Classification Interpretation***
Chengzhuan Bao, Dehua Chen, Mei Wang and Qiao Pan (Donghua University, China)

14:20 ***LGEFE: Effective Local-Global-External Feature Extraction for 3D Point Cloud Classification***
Jiuqiang Li (Southwest Jiaotong University, China)

14:40 ***CDANER: Contrastive Learning with Cross-Domain Attention for Few-Shot Named Entity Recognition***
Wei Li (University of Chinese Academy of Sciences, China); Hui Li (Institute of Information Engineering, Chinese Academy of Science, China); Jingguo Ge and Lei Zhang (Institute of Information Engineering, Chinese Academy of Sciences, China); liangxiong Li (Insitute of Information Engineering, CAS, China); Bingzhen Wu (Institute of Information Engineering, Chinese Academy of Science, China)

15:00 – 15:30
Coffee Break
Room: Hall 1

15:30 – 16:30
Plenary: Kenji Doya
Room: Arena 1B
Session Chair: Nik Kasabov and Akira Hirose

“Bayesian inference, reinforcement learning, and the cortico-basal ganglia circuit”
Kenji Doya
Okinawa Institute of Science and Technology

Bayesian inference is a standard way of handling uncertainties in sensory perception and reinforcement learning is a common way of acting in unknown environments. While they are used in combination for perception and action in uncertain environments, the similarity of their computations has been formulated as the duality of inference and control, or control as inference.

In this talk, I will review these theoretical frameworks and discuss their implications in understanding the common circuit architectures of the sensory and motor cortices, and possible roles of the basal ganglia in motor and sensory processing.

16:30 – 18:30
Domain Adaptation
Day3_PM2_Rm1
Room: Arena 1B
Session Chair: Sriparna Saha

16:30 ***Discriminative Feature Mining and Alignment for Unsupervised Domain Adaptation***
Jing Xiang, Xinyue Zhang, Chunwei Wu, Hanxiu Zhang and Guitao Cao (East China Normal University, China); Hong Wang (Shanghai Research Institute of Microwave Equipment, China)

16:50 ***Semi-Supervised Generalized Source-Free Domain Adaptation (SSG-SFDA)***
Jiayu An and Changming Zhao (HuaZhong University of Science and Technology, China); D. Wu (Huazhong University of Science and Technology, China)

17:10 ***Transformer-Based Multi-Source Domain Adaptation Without Source Data***
Gang Li and Chao Wu (Zhejiang University, China)

17:30 ***Partially-Labeled Domain Generalization via Multi-Dimensional Domain Adaptation***
Feiyang Ye (University of Technology Sydney, Australia); Jianghan Bao (Southeast University, China); Yu Zhang (Southern University of Science and Technology, China)

17:50 ***Domain Generalization and Feature Fusion for Cross-Domain Imperceptible Adversarial Attack Detection***
Yi Li, Plamen Angelov and Neeraj Suri (Lancaster University, United Kingdom (Great Britain))

18:10 ***A Novel Framework for Multi-Source Domain Adaptation with Discriminative Feature Learning***
Rakesh Sanodiya (IIIT SRI CITY, India); Sampreeth Jangala (IIIT Sri City, India)

16:30 – 18:30
Image Enhancement and Denoising with Neural Networks
Day3_PM2_Rm2
Room: Arena 1A
Session Chair: Gaurab Bhattacharya

16:30 ***Event-Guided Attention Network for Low Light Image Enhancement***
Qiaobin Wang, Haiyan Jin, Haonan Su and Zhaolin Xiao (Xi'an University of Technology, China)

16:50 ***Underwater Image Enhancement with Phase Transfer and Attention***
MD Raqib Khan, Ashutosh Kulkarni and Shruti Shantiling Phutke (Indian Institute of Technology Ropar, India); S Murala (IIT Ropar, India)

17:10 ***SwatchNet: Small Components Aware Attention for Fashion Product Recoloring***
Gaurab Bhattacharya (TCS Research, India); Gaurav Sharma (Tata Consultancy Services, India); Kuruvilla Abraham (Tata Consultancy Services (TCS), India); Nikhil Kilari and Jayavardhana Gubbi (TCS Research, India); Bagya Lakshmi V, P. Balamuralidhar and Arpan Pal (Tata Consultancy Services, India)

17:30 ***How Image Corruption and Perturbation Affect Out-Of-Distribution Generalization and Calibration***
Keigo Tada (Ritsumeikan University, Japan); Hiroki Naganuma (Université de Montréal, Canada)

16:30 – 18:30
Neural Networks for Prediction
Day3_PM2_Rm3
Room: Foyer E
Session Chair: Sariah Mghames and Mohan Timilsina

16:30 ***Dynamic Spatio-Temporal Multi-Scale Representation for Bus Ridership Prediction***
Lilan Peng (Southwest Jiaotong University & School of Computing and Artificial Intelligence, China); Xiu Wang (Sichuan Technology and Business University, China); Hongchun Lu (Southwest Jiaotong Universtiy, China); Xiangyu Guo, Tianrui Li and Shenggong Ji (Southwest Jiaotong University, China)

16:50 ***A Neuro-Symbolic Approach for Enhanced Human Motion Prediction***
Sariah Mghames, Luca Castri and Marc Hanheide (University of Lincoln, United Kingdom (Great Britain)); Nicola Bellotto (University of Padua, Italy)

17:10 ***Adaptive Sparseness for Correntropy-Based Robust Regression via Automatic Relevance Determination***
Yuanhao Li (Tokyo Institute of Technology, Japan); Badong Chen (Xi'an Jiaotong University, China); Okito Yamashita (ATR, Japan); Natsue Yoshimura (Tokyo Institute of Technology, Japan); Yasuharu Koike (Precision and Intelligence Laboratory, Tokyo Institute of Technology, Japan)

17:30 ***Machine Learning Survival Models for Relapse Prediction in a Early Stage Lung Cancer Patient***
Mohan Timilsina (University of Galway, Ireland)

17:50 ***DDIN: Deep Disentangled Interest Network for Click-Through Rate Prediction***
Xin-Wei Yao, Chuan He, Wei-Wei Xing, Qi-Chao Lu, Xin-Ge Zhang and Yu-Chen Zhang (Zhejiang University of Technology, China)

18:10 ***Deep Multi-Representation Model for Click-Through Rate Prediction***
Shereen Elsayed (University of Hildesheim, Hildesheim, Germany); Lars Schmidt-Thieme (University of Hildesheim, Germany)

16:30 – 18:30
Image Re-Identification and Retrieval
Day3_PM2_Rm4
Room: Central Room B
Session Chair: Jiayang Wang

16:30 ***Pyramidal Mixer Network for Video-Based Person Re-Identification***
Ruijie Zhang and Ping Wei (Xi'an Jiaotong University, China); Changkai Li (Baidu Company, China); Yuxin Wang (Xi'an Jiaotong University, China)

16:50 ***SFMNet: Self-Guided Feature Mining Network for Vehicle Re-Identification***
Zhangwei Li, Yuhui Deng, Zhimin Tang and Junhao Huang (Jinan University, China)

17:10 ***Attention Map Feature Fusion Network for Zero-Shot Sketch-Based Image Retrieval***
Honggang Zhao, Mingyue Liu and Yinghua Lin (Chongqing Normal University, China); Mingyong Li (Chongqing Normal University, Chongqing, China)

17:30 ***A Person Re-Identification Method Incorporating Multigrain Features and Human Body Knowledge***
Jiayang Wang (Jiangxi University of Finance and Economic & Jiangxi Agriculture University, China); Zheng Wan (Jiangxi University of Finance and Economics, China); Chao Wang (Wuhan University, China); Wenwen Du (Nanchang University, China)

17:50 ***Triple Consistency-Based Self-Ensembling Model for Unsupervised Domain Adaption in Medical Image Segmentation***
Andrew Shi and Wei Feng (Airdoc, China)

18:10 ***Class-Specific Variational Auto-Encoder for Content-Based Image Retrieval***
Mehdi Rafiei and Alexandros Iosifidis (Aarhus University, Denmark)

16:30 – 18:30
Transfer Learning and Optimization
Day3_PM2_Rm5
Room: Central Room C
Session Chair: Marcus Liwicki and Umer Mushtaq

16:30 ***Multi-Agent Knowledge Transfer in a Society of Interpretable Neural Network Minds for Dynamic Context Formation in Swarm Shepherding***
Duy Tung Nguyen and Hemant Singh (University of New South Wales - Canberra, Australia); Saber Elsayed (University of New South Wales, Australia); Robert Hunjet (Defence Science and Technology Organisation, Australia); Hussein A Abbass (University of New South Wales, Australia)

16:50 ***Learning What, Where and Which to Transfer***
Lucas L Nogueira and David L Macêdo (Federal University of Pernambuco, Brazil); Cleber Zanchettin (Universidade Federal de Pernambuco, Brazil); Fernando M Paula Neto and Adriano L de Oliveira (Federal University of Pernambuco, Brazil)

17:10 ***Domain Adaptable Self-Supervised Representation Learning on Remote Sensing Satellite Imagery***
Muskaan Chopra (Chandigarh College of Engineering and Technology, India); Prakash Chandra Chhipa (Luleå University of Technology, Sweden); Gopal Mengi and Varun Gupta (Chandigarh College of Engineering and Technology, India); Marcus Liwicki (Lulea University of Technology, Sweden)

17:30 ***Cross-Domain Few-Shot Relation Extraction via Representation Learning and Domain Adaptation***
Zhongju Yuan, Zhenkun Wang and Genghui Li (Southern University of Science and Technology, China)

17:50 ***SMKD: Selective Mutual Knowledge Distillation***
Ziyun Li (Hasso Plattner Institute, Germany); Xinshao Wang (University of Oxford, United Kingdom (Great Britain)); Neil Robertson (Queen's University of Belfast, United Kingdom (Great Britain)); David Clifton (University of Oxford, United Kingdom (Great Britain)); Christoph Meinel (Hasso-Plattner-Institute, Germany); Haojin Yang (Hasso Plattner Institute, Germany)

18:10 ***Argument Mining with Modular BERT and Transfer Learning***
Umer Mushtaq (Université Paris II - Panthéon-Assas, France); Jérémie Cabessa (Université Paris-Saclay, France)

16:30 – 18:30
Recurrent Neural Networks and Models of Neurons
Day3_PM2_Rm6
Room: Room 5
Session Chair: Jeffrey Krichmar

16:30 ***Leaky-Integrate-And-Fire Neuron-Like Long-Short-Term-Memory Units as Model System in Computational Biology***
Richard Carl Gerum (York University, Canada); André Erpenbeck (University of Michigan, Germany); Patrick Krauss and Achim Schilling (Friedrich-Alexander-University Erlangen-Nürnberg, Germany)

16:50 ***On the Ensemble of Collision Perception Neuron Models Towards Ultra-Selectivity***
Jiatao Li, Xuelong Sun, Haiyang Li, Jigen Peng and Qinbing Fu (Guangzhou University, China)

17:10 ***Selective Memory Replay Improves Exploration in a Spiking Wavefront Planner***
Harrison C Espino (University of California, Irvine, USA); Robert Bain and Jeffrey Krichmar (University of California Irvine, USA)

17:30 ***Dynamic Analysis and an Eigen Initializer for Recurrent Neural Networks***
Ran Dou and Jose Príncipe (University of Florida, USA)

17:50 ***Universal Recurrent Event Memories for Streaming Data***
Ran Dou and Jose Príncipe (University of Florida, USA)

18:10 ***Stability and Limit Cycles of Fuzzy Inferences in a Recurrent Petri-Like Neural Network***
Lidia Ghosh (Institute of Engineering and Management Kolkata, India); Dipanjan Konar (Calcutta University, India); Konar Amit (Jadavpur University, Kolkata, India); Atulya K Nagar (Liverpool Hope University, United Kingdom (Great Britain))

16:30 – 18:30
Neural Networks for Data Classification: Part 2
Day3_PM2_Rm7
Room: Room 6
Session Chair: Ismail Alkhouri

16:30 ***Modeling Zero-Shot Relation Classification as a Multiple-Choice Problem***
Yuquan Lan, Dongxu Li, Yunqi Zhang and Hui Zhao (East China Normal University, China); Gang Zhao (Microsoft, China)

16:50 ***A Non-Targeted Attack Approach for the Coarse Mis-Classification Problem***
Ismail Alkhouri and George Atia (University of Central Florida, USA); Alvaro Velasquez (Air Force Research Laboratory, USA)

17:10 ***Quantum Convolutional Neural Network Architecture for Multi-Class Classification***
Samarth Kashyap (Indian Institute of Science, India); Shayan Garani (Indian Institute of Science, Bangalore, India)

17:30 ***Pruning of Dendritic Neuron Model with Significance Constraints for Classification***
Xudong Luo and Long Ye (Communication University of China, China); Xiaolan Liu (Hengshui University, China); Xiaohao Wen (Guangxi Normal University, China); Qin Zhang (Communication University of China, China)

17:50 ***Mass-Based Short Term Selection of Classifiers in Data Streams***
Daniel Nowak Assis (Pontifical Catholic University of Parana, Brazil); Fabrício Enembreck (Pontifical Catholic University of Paraná, Brazil); Jean Paul Barddal (Pontifícia Universidade Católica do Paraná & Programa de Pós-Graduação Em Informática, Brazil)

18:10 ***PCD2Vec: A Poisson Correction Distance Based Approach for Viral Host Classification***
Sarwan Ali, Taslim Murad and Murray Patterson (Georgia State University, USA)

16:30 – 18:30
Rumor Detection and Fault Diagnosis
Day3_PM2_Rm8
Room: Room 7
Session Chair: Valentin Formont

16:30 ***Multi-Level Interaction Network for Multi-Modal Rumor Detection***
Ting Zou, Zhong Qian and Peifeng Li (Soochow University, China)

16:50 ***TEH-GCN: Topic-Event Based Hierarchical Graph Convolutional Networks for Rumor Detection***
Luo Zhengliang, Peifeng Li, Zhong Qian and Zhu Xiaoxu (Soochow University, China)

17:10 ***A Rumor Detection Model Based on Weighted Graph Convolutional Neural Network***
Jianyong Yu, Linlin Gu, Zekun Liu and Xue Han (Hunan University of Science and Technology, China)

17:30 ***TIDE: Affective Time-Aware Representations for Fine-Grained Depression Identification on Social Media***
Zhuanzhuan Liu (Tianjin University, China); Xing Ma (University of Tianjin, China); Peng Zhang and Chuzhan Hao (Tianjin University, China); Shuo Zhang (Floor 5 Building 10 Jinshang Science Park, Jinnan District, Tianjin, China); Lin Wang (Qinghai Nationalities University & Tianjin Wenge Technology, China)

17:50 ***N-BEATS Neural Network Structure for Sub-Critical Boiler Data-Driven Modelling***
Valentin Formont and Lars Nord (Norwegian University of Science and Techonology, Norway)

18:10 ***OOD-Robust Boosting Tree for Intrusion Detection Systems***
Satoru Koda and Ikuya Morikawa (Fujitsu Limited, Japan)

16:30 – 18:30
Special Session: Federated Learning – Methods, Applications, Challenges, and Beyond
Day3_PM2_Rm9
Room: Room 8
Session Chairs: Mirko Polato and Zenglin Xu

16:30 ***FedGrad: Mitigating Backdoor Attacks in Federated Learning Through Local Ultimate Gradients Inspection***
Dung Thuy Nguyen and Duy Anh Nguyen (VinUniversity, Vietnam); Thanh-Hung Nguyen (Hanoi University of Science and Technology, Vietnam); Kok-Seng Wong (VinUniversitty, Vietnam); Huy Hieu Pham (VinUniversity, Vietnam); Truong Thao Nguyen (National Institute of Advanced Industrial Science and Technology (AIST), Japan); Phi Le Nguyen (Hanoi University of Science and Technology, Vietnam)

16:50 ***Personalized Federated Learning with Multi-Branch Architecture***
Junki Mori (NEC Corporation, Japan); Tomoyuki Yoshiyama (SoftBank Corp., Japan); Ryo Furukawa (NEC Corporation, Japan); Isamu Teranishi (NEC, Japan)

17:10 ***Privacy Inference-Empowered Stealthy Backdoor Attack on Federated Learning Under Non-IID Scenarios***
Haochen Mei and Gaolei Li (Shanghai Jiao Tong University, China); Jun Wu (Waseda University, Japan); Longfei Zheng (Ant Group, China)

17:30 ***Personalized Federated Learning via Knowledge Sharing-Based Model Structure Adaption***
Xiaochan Wang and Zhi Wang (Tsinghua University, China)

17:50 ***PFED-AGG: A Personalized Private Federated Learning Aggregation Algorithm***
Yongjie Zhu (Harbin Engineering University,China); Yukun Yan and Qilong Han (Harbin Engineering University, China)

18:10 ***Federated Survival Forests***
Alberto Archetti and Matteo Matteucci (Politecnico di Milano, Italy)

16:30 – 18:30
Virtual: Neural Network Training Strategies: Part 2
Day3_PM2_RmV1
Room: Virtual Room 1
Session Chair: Yiwei Luo and Yuhan Xiong

16:30 ***Inductive Dummy-Based Homogeneous Neighborhood Augmentation for Graph Collaborative Filtering***
Wei Ding and Jiawei Sun (Shanghai Jiao Tong University, China); Jie Li (Shanghai Jiaotong University, China); Chentao Wu (Shanghai Jiao Tong University, China)

16:50 ***Multi-Scale Depth-Aware Unsupervised Domain Adaption in Semantic Segmentation***
Congying Xing and Lefei Zhang (Wuhan University, China)

17:10 ***AdaptiveTune: Adaptive Value with Bernoulli Noise Can Help Us Finetune Better***
Yi Wang and Shanliang Pan (Ningbo University, China)

17:30 ***Learning Low-Rank Representations for Model Compression***
Zezhou Zhu and Yuan Dong (Beijing University of Posts and Telecommunications, China); Zhao Zhong (Huawei, China)

17:50 ***GAN Latent Space Manipulation Based Augmentation for Unbalanced Emotion Datasets***
Yuhan Xiong and Jiawei You (Shanghai Jiao Tong University, China); Liping Shen (Shanghai Jiaotong University, China)

18:10 ***Solving Continual Learning with Noisy Labels by Sample Selection and Replay***
Yiwei Luo (Xiamen University, China); Min Jiang (Xiamen University, China, China)

16:30 – 18:30
Virtual: Image Processing with Neural Networks
Day3_PM2_RmV2
Room: Virtual Room 2
Session Chair: Chao Wei and John W. Sheppard

16:30 ***Color-Difference Correntropy Guided Convolution Network for Point Cloud Semantic Segmentation***
Zhou Jiang, Jing Yang, Chunyu Xuan, Dong Zhang and Shaoyi Du (Xi'an Jiaotong University, China)

16:50 ***Image Alone are Not Enough: A General Semantic-Augmented Transformer-Based Framework for Image Captioning***
Jiawei Liu and Xin Lin (ECNU, China); Liang He (East China Normal University, China)

17:10 ***Deformable Feature Interaction Network and Graph Structure Reasoning for 3D Dense Alignment and Face Reconstruction***
Jia Deng and Xiaofei Li (Ningxia Normal University, China); Xing Wang (Beijing China-Power Information Technology, China); Xiangzheng Li (& Ningxia Normal University, China)

17:30 ***Accommodating Self-Attentional Heterophily Topology into High- and Low-Pass Graph Convolutional Network for Skeleton-Based Action Recognition***
Chao Wei and Zhidong Deng (Tsinghua University, China)

17:50 ***Efficient Temporal Action Localization with Temporal Attention and Gaussian Weight***
Mengbo Sun, Hongda Wang and Yonghong Song (Xi'an Jiaotong University, China)

18:10 ***Cross-Domain Similarity in Domain Adaptation for Human Activity Recognition***
Samra Kasim (Johns Hopkins University, USA); John W. Sheppard (Montana State University, USA)

16:30 – 18:30
Virtual: Language Models and Cognitive Architectures
Day3_PM2_RmV3
Room: Virtual Room 3
Session Chair: Eduardo V. L. Barboza

16:30 ***GamMa: Efficient Fine-Tuning of Pre-Trained Language Models Using Gradient Activation Mapping Masking***
Anchun Gui, Jinqiang Ye and Han Xiao (Xiamen University, China)

16:50 ***Pretraining A Prompt Pool for Vision-Language Models***
Jun Liu (Institute of Computing Technology, Chinese Academy of Sciences & University of Chinese Academy of Sciences, China); Yang Gu, Zhaohua Yang, Shuai Guo and Yiqiang Chen (Institute of Computing Technology, Chinese Academy of Sciences, China); Huaqiu Liu (Peking University, China)

17:10 ***SQL Synthesis with Input-Output Example Based on Deep Learning***
Shun Zhang, Quansheng Dou, Huanling Tang, Hao Pan and Wang HuiXian (Shandong Technology and Business University, China)

17:30 ***Self-Supervised Bidirectional Prompt Tuning for Entity-Enhanced Pre-Trained Language Model***
Jiaxin Zou and Xianghong Xu (Tsinghua University, China); Jiawei Hou and Qiang Yan (Tencent, China); Haitao Zheng (Tsinghua University, China)

17:50 ***On a New Type of Neural Computation for Probabilistic Symbolic Reasoning***
Ximing Qiao and Hai (Helen) Li (Duke University, USA)

18:10 ***On Hyperdimensional Computing-Based Federated Learning: A Case Study***
Sizhe Zhang and Dongning Ma (Villanova University, USA); Song Bian (Kyoto University, Japan); Lei Yang (George Mason University, USA); Xun Jiao (Vilanova University, USA)

16:30 – 18:30
Virtual: Prediction and Control
Day3_PM2_RmV4
Room: Virtual Room 4
Session Chair: Dipanjan Konar

16:30 ***A Novel Hybrid Model Based on Deep Learning and Autoregressive for Air Quality Prediction***
Can Wang and Zhu Minghua (East China Normal University, China)

4:54 ***Credit Default Prediction on Time-Series Behavioral Data Using Ensemble Models***
Kangshuai Guo (University of Electronic Science and Technology of China, China); Shichao Luo (AIBANK, China); Ming Liang (China Construction Bank, China); Zhongjian Zhang, Huabin Yang and Yan Wang (University of Electronic Science and Technology of China, China); Yingjie Zhou (Sichuan University, China)

5:18 ***Bootstrap Decomposition Enhanced Orthogonal-Basis Projection Model for Long-Term Time Series Forecasting***
Xiaoyu Wang, Pengyu Xu, Mingyang Song and Liping Jing (Beijing Jiaotong University, China)

5:42 ***SATNet: Upgraded LSTM Network for Mining Time Series Correlation Utilizing the Self-Attention Mechanism***
Xiangyu Dai and Quan Zou (Southwest University, China)

6:06 ***A Multiple Command UAV Control System Based on a Hybrid Brain-Computer Interface***
Qingfu Wu, Shanghong Xie, Zhen Zeng, Qian Huang and Jiahui Pan (South China Normal University, China)

18:30 – 19:30
Poster Session 3
Day 3_Posters
Room: Hall 2
Session Chair: Rory Campbell and Adam Pirog

#1: A Scalable GPT-2 Inference Hardware Architecture on FPGA
Anil Yemme (Intel Technology India, India); Shayan Garani (Indian Institute of Science, Bangalore, India)

#2: Adversarial Domain Adaptation Network with Enhanced Feature Discriminability for Thyroid Ultrasound Images
Xuewei Li and Pinjie Li (TianJin University, China); Ruixuan Zhang (Tianjin University, China); Chenhan Wang (OpenBayes IT Limited Company, China); Xi Wei (Tianjin Medical University Cancer Institute and Hospital, China); Mankun Zhao (TianJin University, China)

#3: On Fine-Tuned Deep Features for Unsupervised Domain Adaptation
Qian Wang (Durham University, USA); Fanlin Meng (University of Manchester, United Kingdom (Great Britain)); Toby Breckon (Durham University, United Kingdom (Great Britain))

#4: Snapshot Spectral Clustering -- a Costless Approach to Deep Clustering Ensembles Generation
Adam Pirog (4Semantics & Wrocław University of Science and Technology, Poland); Halina Kwasnicka (Wroclaw University of Science and Technology, Poland)

#5: An Efficient Fuzzy-Pruned High Dimensional Clustering with Minimal Distance Measure
Lidia Ghosh (Institute of Engineering and Management Kolkata, India); Dipanjan Konar (Calcutta University, India)

#6: 3D Super Resolution for Non-Isotropic Medical Image Through Multi-Input 3D ResUnet
Youjin Seo, ByeongChang Jeong, Yeji Yoon and Daegyeom Kim (Korea University, Korea (South)); JuHong Min (Sungkyunkwan University, Korea (South)); Cheol E Han (Korea University, Korea (South))

#7: GEMM: A Graph Embedded Model for Memorability Prediction
Tahsin Tariq Banna, Swakshar Deb and Sejuti Rahman (University of Dhaka, Bangladesh); Shafin Rahman (North South University, Bangladesh)

#8: Domain Translation via Latent Space Mapping
Tsiry Mayet (Laboratoire d'Informatique, de Traitement de l'Information Et Des Système & INSA Rouen, France); Clement Chatelain (LITIS Rouen, France); Romain Herault (INSA de Rouen, France); Simon Bernard (LITIS Rouen, France)

#9: Conformal Prediction Enhanced SVMs for Swarm Behavior Classification
Xi Zepu (Sun Yat-Sen University & Guangzhou, China); Hongbo Chen (Sun Yat-Sen University, China); Xiaoqian Chen and Wen Yao (Chinese Academy of Military Science, China)

#10: 18:44 ***LFLD: A Lightweight Facial Landmark Detector Based on Auxiliary Heatmap***
Shidong Chen, Huicong Bian, Yalun Wang and Qin Lu (Qilu University of Technology (Shandong Academy of Sciences), China); Weixiao Li (China Mobile Communication Group Co Ltd, China)

#11: Algorithmic Recourse in Mental Healthcare
Anisio Lacerda, Claudio Almeida and Leonardo Ferreira (Federal University of Minas Gerais, Brazil); Adriano Pereira (Federal University of Minas Gerais (UFMG), Brazil); Gisele Lobo Pappa, Wagner Meira Jr, Debora Miranda, Marco A. Romano-Silva and Leandro Malloy Diniz (Federal University of Minas Gerais, Brazil)

#12: Interpretability-Guided Automatic Segmentation Approach in Ultrasound Images Using Polygon Searching Model and Quantum Evolution Neural Network
Tao Peng (Soochow University & UT Southwestern Medical Center, China); Yanqing Xu (University of Texas Southwestern Medical Center, USA); Yuntian Shen (The Second Affiliated Hospital of Soochow University, China); Jing Cai (Hong Kong Polytechnic University, Hong Kong)

#13: Informed Pre-Training of Neural Networks Using Prototypes from Prior Knowledge
Laura von Rueden (Fraunhofer IAIS & University of Bonn, Germany); Sebastian Houben (Hochschule Bonn-Rhein-Sieg, Germany); Kostadin Cvejoski (Fraunhofer IAIS and University of Bonn, Germany); Jochen Garcke (University of Bonn, Germany); Christian Bauckhage (Fraunhofer IAIS and University of Bonn, Germany); Nico Piatkowski (Fraunhofer IAIS, Germany)

#14: Emotion-Guided Music Accompaniment Generation Based on Variational Autoencoder
Qi Wang and Shubing Zhang (China University of Geosciences(Wuhan)); Li Zhou (China Univerity of Geosciences, China)

#15: On the Space of Coefficients of a Feedforward Neural Network
Rory Campbell (Canada); Dinesh Valluri (Postdoc, Canada)

#16: Understanding the Structure of QM7b and QM9 Quantum Mechanical Datasets Using Unsupervised Learning
Julio Valdes (Researcher at the National Research Council of Canada, Canada); Alain Beaudelaire Tchagang (NRC, Canada)

#17: Mental Health Prediction Through Text Chat Conversations
Muhammad Nouman (Deakin University, Australia); Hollian Sara (Lyf Support App, Australia); Sui Yang Khoo (Deakin University, Australia); MA Parvez Mahmud (University of Melbourne, Australia); Abbas Z. Kouzani (Deakin University, Australia)

#18: Using Connectome Features to Constrain Echo State Networks
Jacob Morra and Mark Daley (Western University, Canada)

#19: An Energy Theft Detection Framework with Privacy Protection for Smart Grid
Rong Xie (Southeast University, China)

#20: Methodology for Automatic Extraction of Red Flags in Public Procurement
Weslley E M Lima (Federal University of Piauí, Brazil); Ricardo A. L. Rabelo (Federal University of Piaui (UFPI), Brazil); Anselmo de Paiva (Federal University of Maranhão, Brazil); Victor Ribeiro da Silva and Jasson Carvalho da Silva (Federal University of Piauí, Brazil)

#21: CTVAE: Current Task Variational Auto-Encoder with Dynamic Ensemble Loss for Few-Shot Learning
Hao-Chin Su and Yi-Ling Chen (National Taiwan University of Science and Technology, Taiwan)

#22: Hard Negative Sampling via Regularized Optimal Transport for Contrastive Representation Learning
Ruijie Jiang (Tufts University, USA); Prakash Ishwar (Boston University, USA); Shuchin Aeron (Tufts University, USA)

#23: HGNN-GSE: Graduating Student Employment Direction Prediction Based on Heterogeneous Graph Neural Network
Xu Chen, Shuyang Wang, Yongjun Jing and Xiezhong Wang (North Minzu University, China)

#24: Deep Residual Compensation Convolutional Network Without Backpropagation
Mubarakah M Alotaibi (University of York & Taif University, United Kingdom (Great Britain)); Richard Wilson (University of York, United Kingdom (Great Britain))

#25: Data Under Siege: The Quest for the Optimal Convolutional Autoencoder in Side-Channel Attacks
Danny van den Berg (University of Amsterdam, The Netherlands); Tom Slooff (Università Della Svizzera Italiana, Switzerland); Marco Brohet and Kostas Papagiannopoulos (University of Amsterdam, The Netherlands); Francesco Regazzoni (University of Amsterdam, The Netherlands & Università Della Svizzera Italiana, Switzerland)

#26: Multi-Hop Attention GNN with Answer-Evidence Contrastive Loss for Multi-Hop QA
Ni Yang and Meng Yang (Sun Yat-Sen University, China)

#27: Robust Energy-Water Management System with Prediction Interval Based on Deep Learning
Lucas Rojas, Javier Ocaranza, Oscar Cartagena, Doris Saez, Linda Daniele and Constanza Ahumada (University of Chile, Chile)

#28: QCA-Net: Quantum-Based Channel Attention for Deep Neural Networks
Juntao Zhang (AMS, China); Peng Cheng (Coolanyp LLC, USA); Zehan Li (University of Electronic Science and Technology of China, China); Hao Wu (AMS & Institute of System Engineering, China); Wenbo An (China); Jun Zhou (AMS, China)

#29: Bi-Dimensional Approach Based on Graph Neural Network for Alcoholism Predisposition Detection via EEG Signals
Aldísio Gonçalves Medeiros (Federal University of Ceará & Laboratório de Processamento de Imagens, Sinais e Computação Aplicada, Brazil); Francisco Silva (IFCE, Brazil); Lucas de Oliveira Santos (Federal University of Ceará, Brazil); Pedro Pedrosa Rebouças Filho (IFCE, Brazil)

#30: Convolutional and LSTM Neural Networks for Solar Power Forecasting
Gavin Fungtammasan and Irena Koprinska (University of Sydney, Australia)

#31: Exploring the Hysteresis Effect of Li-Ion Batteries: A Machine Learning Based Approach
Fei Li, Sijie Zhang, Heng Li, Yaoxin Xia, Lisen Yan and Zhiwu Huang (Central South University, China)

#32: Improving Small Object Detection with DETRAug
Evair Cunha (UFPE, Brazil); Cleber Zanchettin (Universidade Federal de Pernambuco, Brazil); David L Macêdo (Federal University of Pernambuco, Brazil)

#33: Adaptive Consensus Optimization Method for GANs
Sachin Kumar Danisetty (Wadhwani Institute for AI, India); Santhosh Reddy Mylaram (Oracle Pvt Limited, India); Pawan Kumar (International Institute of Information Technology, Hyderabad, India)

#34: FW-ECPE: An Emotion-Cause Pair Extraction Model Based on Fusion Word Vectors
Xinyi Song, Dongsheng Zou, Yi Yu and Xiaotong Zhang (Chongqing University, China)

#35: Adaptive Priority Reweighing for Generalizing Fairness Improvement
Zhihao Hu (University of Science and Technology of China, China); Yiran Xu (University of Warwick, United Kingdom (Great Britain)); Xinmei Tian (University of Science and Technology of China, China)

#36: Landmark-Based Partial Multi-Label Learning with Noise Processing
Boyuan Zhang (China University of Mining & Technology, Beijing, China); Zheming Li (China)

#37: Uncertain? Be Random
Eric Bax (Yahoo, USA); Natalie Bax (Carleton College, USA)

#38: Clustering Joint Locality Preserving Projections
Yuanhao Li (The University of Queensland, Australia)

#39: Adaptive Learning Rate for Unsupervised Learning of Deep Neural Networks
Vladimir Golovko (John Paul II University of Applied Sciences in Biala Podlaska, Poland); Aliaksandr Kroschanka (Brest State Technical University, Belarus); Piotr Lichograj and Marta Chodyka (John Paul II University of Applied Sciences in Biala Podlaska, Poland); Ehor Mikhno (Brest State Technical University, Belarus)

#40: Reinforcement Learning Based Black-Box Adversarial Attack for Robustness
Soumyendu Sarkar (Hewlett Packard Enterprise, USA); Ashwin Ramesh Babu (Hewlett Packard Labs & Hewlett Packard Enterprise, USA); Sajad Mousavi (Hewlett Packard Enterprise, USA); Vineet Gundecha (Hewlett Packard Enterprise, India); Sahand Ghorbanpour (Hewlett Packard Enterprise (HPE), USA); Avisek Naug (Hewlett Packard Enterprise, USA); Ricardo Luna Gutierrez (Hewllet Packard Enterprise, USA); Antonio Guillen (Hewlett Packard Enterprise, USA)

#41: Deep Predictive Network for Inference and Dynamic Optimization of Task Goals During Human-Robot Collaboration
Shun Hiramatsu and Shingo Murata (Keio University, Japan)

#42: Temporal Spatial Decomposition and Fusion Network for Time Series Forecasting
Zhou Liwang (Zhejiang University, China); Jing Gao (Anhui University, China)

#43: Spatio-Temporal Graph Neural Networks for Infant Language Acquisition Prediction
Andrew P Roxburgh, Floriana Grasso and Terry R Payne (University of Liverpool, United Kingdom (Great Britain))

#44: SCIRNet: Skeleton-Based Cattle Interaction Recognition Network with Inter-Body Graph and Semantic Priority
Yang Yang, Miuka Komatsu, Kenji Oyama, and Takenao Ohkawa (Kobe University, Japan)

19:30 – 23:00
Banquet and Award Ceremony
Room: Arena 2

Thursday, June 22, 2023

8:30 – 9:30
Plenary: DeLiang Wang
Room: Arena 1B
Session Chair: Junbin Gao

Neural Spectrospatial Filter: On Beamforming in the Deep Learning Era
DeLiang Wang
Ohio State University

As the most widely-used spatial filtering approach for multi-channel signal separation, beamforming extracts the target signal arriving from a specific direction. We present an emerging approach based on multi-channel complex spectral mapping, which trains a deep neural network (DNN) to directly estimate the real and imaginary spectrograms of the target signal from those of the multi-channel noisy mixture. In this all-neural approach, the trained DNN itself becomes a nonlinear, time-varying spectrospatial filter. How does this conceptually simple approach perform relative to commonly-used beamforming techniques on different array configurations and in different acoustic environments? We examine this issue systematically on speech dereverberation, speech enhancement, and speaker separation tasks. Comprehensive evaluations show that multi-channel complex spectral mapping achieves speech separation performance comparable to or better than beamforming for different array geometries, and reduces to monaural complex spectral mapping in single-channel conditions, demonstrating the versatility of this new approach for multi-channel and single-channel speech separation. In addition, such an approach is computationally more efficient than popular mask-based beamforming. We conclude that this neural spectrospatial filter is capable of superseding traditional and mask-based beamforming.

9:30 – 10:30
Coffee Break
Room: Hall 1

10:00 – 12:00
Neural Networks for Object Detection: Part 2
Day4_AM_Rm1
Room: Arena 1B
Session Chairs: Gregory Ditzler and Ziling Wu

10:00 ***AMD: Adaptive Masked Distillation for Object Detection***
Guang Yang (Nanjing Normal University, China); Yin Tang (Nanjing Tech University, China); Jun Li and Jianhua Xu (Nanjing Normal University, China); Xili Wan (Nanjing Tech University, China)

10:20 ***Robustness of Deep Learning Methods for Occluded Object Detection - A Study Introducing a Novel Occlusion Dataset***
Ziling Wu (University of Nottingham, United Kingdom (Great Britain)); Armaghan Moemeni (University of Nottingham, United Kingdom (Great Britain)); Simon Castle-Green and Praminda Caleb-Solly (University of Nottingham, United Kingdom (Great Britain))

10:40 ***DDNet: Density and Depth-Aware Network for Object Detection in Foggy Scenes***
Boyi Xiao, Jin Xie and Jing Nie (Chongqing University, China)

11:00 ***Boosting Aerial Object Detection Performance via Virtual Reality Data and Multi-Object Training***
Gregory Ditzler, Nikolas Koutsoubis, Kyle Naddeo, Nidhal Bouaynaya, George D. Lecakes, Jr. and Garrett Williams (Rowan University, USA); Thomas Kiel (US Army Futures Command, USA)

11:20 ***SLX: Similarity Learning for X-Ray Screening and Robust Automated Disassembled Object Detection***
Nikolaos Dionelis (The University of Edinburgh, United Kingdom (Great Britain)); Richard Jackson (Dstl, United Kingdom (Great Britain)); Sotirios A. Tsaftaris and Mehrdad Yaghoobi (The University of Edinburgh, United Kingdom (Great Britain))

10:00 – 12:00
Special Session: Randomization-Based Deep and Shallow Learning Algorithms and/or Biomedical Applications
Day4_AM_Rm2
Room: Arena 1A
Session Chairs: P. N. Suganthan and M. Tanveer

10:00 ***Investigating Random Variations of the Forward-Forward Algorithm for Training Neural Networks***
Fabio Giampaolo (University of Naples Federico II, Italy); Stefano Izzo and Edoardo Prezioso (University of Naples Federico Ii, Italy); Francesco Piccialli (University of Naples Federico II, Italy)

10:20 ***Swarm Behavior Recognition: Martingales Protected Paradigm***
Xi Zepu (Sun Yat-Sen University & Guangzhou, China); Hongbo Chen (Sun Yat-Sen University, China); Xiaoqian Chen and Wen Yao (Chinese Academy of Military Science, China)

10:40 ***Weighted Kernel Ridge Regression Based Randomized Network for Alzheimer's Disease Diagnosis Using Susceptibility Weighted Images***
M. Tanveer (Indian Institute of Technology Indore, India); Shradha Varma (National Institute of Technology Silchar, India); Rahul Sharma (National Institute of Technology, Silchar, India); Tripti Goel (National Institute of Technology Silchar Assam, India & NIT Silchar, unknown); Ponnuthurai Nagaratnam Suganthan (Qatar University, Qatar)

11:00 ***FsNet: Feature Selection Network on High-Dimensional Biological Data***
Dinesh Singh (IIT Mandi, India); Héctor Climente González (RIEKN AIP, Japan); Mathis Petrovich (Ecole Des Ponts ParisTech, France); Eiryo Kawakami (RIKEN, Japan); Makoto Yamada (RIEKN AIP, Japan & Kyoto University, OIST, Japan)

11:20 ***Online Ensemble Deep Random Vector Functional Link for the Assistive Robots***
Ruobin Gao, Sibo Yang and Meng Yuan (Nanyang Technological University, Singapore); Xuefei Song (Jilin Provincial Experimental School, China); Ponnuthurai Nagaratnam Suganthan (Qatar University, Qatar); Wei Tech Ang (Nanyang Technological University, Singapore)

10:00 – 12:00
Question-and-Answer Systems: Part 1
Day4_AM_Rm3
Room: Foyer E
Session Chair: Zhe Wen and Jie Wang

10:00 ***Improving Knowledge Tracing with Diverse Question Factors***
Yan Zhao, Huifang Ma, Wentao Wang, Weiwei Gao, Jing Wang and Xiangchun He (Northwest Normal University, China)

10:20 ***Constructing Cloze Questions Generatively***
Yicheng Sun (Univiersity of Massachusets Lowell, USA); Jie Wang (University of Massachusetts, USA)

10:40 ***Music Question Answering Based on Aesthetic Experience***
Wenhao Gao (Zhengzhou University, China); Xiaobing Li (Central Conservatory of Music, China); Yun Tie and Lin Qi (Zhengzhou University, China)

11:00 ***Schema Item Matters in Knowledge Base Question Answering***
Zhe Wen (Institute of Information Engineering, Chinese Academy of Sciences, China); Qingyi Si, Zheng Lin, Huan Liu and Peng Fu (Institute of Information Engineering Chinese Academy of Sciences, China); Weiping Wang (Institute of Information Engineering, Chinese Academy of Sciences, China)

11:20 ***Improving Complex Knowledge Base Question Answering with Relation-Aware Subgraph Retrieval and Reasoning Network***
Dan Luo and Jiawei Sheng (University of Chinese Academy of Sciences, China); Hongbo Xu (Institute of Information Engineering, Chinese Academy of Sciences, China); Lihong Wang (Chinese CERT, China); Bin
Wang (Xiaomi, China)

10:00 – 12:00
Reinforcement Learning Algorithms: Part 1
Day4_AM_Rm4
Room: Central Room B
Session Chair: Chengpeng Hu and Takayoshi Yamashita

10:00 ***Visual Explanation for Cooperative Behavior in Multi-Agent Reinforcement Learning***
Hidenori Itaya, Tom Sagawa, Tsubasa Hirakawa, Takayoshi Yamashita and Hironobu Fujiyoshi (Chubu University, Japan)

10:20 ***Deep Reinforcement Learning Based Multi-Task Automated Channel Pruning for DNNs***
Xiaodong Ma and Weiwei Fang (Beijing Jiaotong University, China)

10:40 ***Mnemonic Dictionary Learning for Intrinsic Motivation in Reinforcement Learning***
Renye Yan (Peiking University, China); Zhe Wu (Qiyuan Lab, China); Yuan Zhan (Institute of Automation Chinese Academy of Sciences, China); Pin Tao (Tsinghua University, China); Zongwei Wang and Yimao Cai (Peking University, China); Junliang Xing (Tsinghau University, China)

11:00 ***Evolving Constrained Reinforcement Learning Policy***
Chengpeng Hu, Jiyuan Pei, Jialin Liu and Xin Yao (Southern University of Science and Technology, China)

11:20 ***Uncertainty-Aware Data Augmentation for Offline Reinforcement Learning***
Yunjie Su, Yilun Kong and Xueqian Wang (Tsinghua University, China)

11:40 ***Reducing the Cost of Cycle-Time Tuning for Real-World Policy Optimization***
Homayoon Farrahi and Rupam Mahmood (University of Alberta, Canada)

10:00 – 12:00
Text Summarisation with Neural Networks
Day4_AM_Rm5
Room: Central Room C
Session Chair: Ziwei Wang

10:00 ***Community-Aware Federated Video Summarization***
Fan Wan (University of Durham, United Kingdom (Great Britain)); Junyan Wang (The University of New South Wales, Australia); Haoran Duan (Durham University, United Kingdom (Great Britain)); Yang Song and Maurice Pagnucco (The University of New South Wales, Australia); Yang Long (Durham University, United Kingdom (Great Britain))

10:20 ***Document-Level Relation Extraction with Entity Interaction and Commonsense Knowledge***
Shen Liu (East China Normal University, China); Xinshu Shen (ECNU & East China Normal University, China); Tingting Liu and Man Lan (East China Normal University, China)

10:40 ***A Deep News Headline Generation Model with REINFORCE Filter***
Aobo Xu and Ling Jian (China University of Petroleum (East China), China)

11:00 ***The Exploration of Knowledge-Preserving Prompts for Document Summarisation***
Chen Chen, Wei Zhang and Alireza Seyed Shakeri (The University of Adelaide, Australia); Makhmoor Fiza (Begum Nusrat Bhutto Women University, Pakistan)

11:20 ***RBPSum: An Extractive Summarization Approach Using Bi-Stream Attention and Position Residual Connection***
Ziwei Wang, Jun Zeng, Hongjin Tao and Lin Zhong (Chongqing University, China)

11:40 ***Adapt-To-Learn Policy for Abstractive Multi-Document Summarization***
Hongzhang Mu (Institute of Information Engineering, Chinese Academy of Sciences & School of Cyber Security, University of Chinese Academy of Sciences, China); Shuili Zhang, Quangang Li, Tingwen Liu and Hongbo Xu (Institute of Information Engineering, Chinese Academy of Sciences, China)

10:00 – 12:00
Transformers: Part 1
Day4_AM_Rm6
Room: Room 5
Session Chair: Sriparna Saha

10:00 ***GenTAL: Generative Denoising Skip-Gram Transformer for Unsupervised Binary Code Similarity Detection***
Litao Li and Steven Ding (Queen's University, Canada); Philippe Charland (Defence R&D Canada - Valcartier, Canada)

10:20 ***Can Multimodal Pointer Generator Transformers Produce Topically Relevant Summaries?***
Sourajit Mukherjee and Raghvendra Kumar (Indian Institute of Technology Patna, India); Sriparna Saha (IIT Patna & Department of CSE, India); Adam Jatowt (University of Innsbruck, Austria); Anubhav Jangra (Indian Institute of Technology Patna, India)

10:40 ***Dense Attention: A Densely Connected Attention Mechanism for Vision Transformer***
Nannan Li and Yaran Chen (Institute of Automation Chinese Academy of Sciences, China); Dongbin Zhao (Chinese Academy of Sciences, China)

11:00 ***Gradient Sparsification for Masked Fine-Tuning of Transformers***
James O' Neill and Sourav Dutta (Huawei, Ireland)

11:20 ***Hierarchical Transformer-Based Siamese Network for Related Trading Detection in Financial Market***
Le Kang (Tsinghua University, China & Zhengzhou Commodity Exchange, China); Tai-Jiang Mu (Tsinghua University, China); Guoping Zhao (Zhengzhou Commodity Exchange, China)

11:40 ***ST-CA YOLOv5: Improved YOLOv5 Based on Swin Transformer and Coordinate Attention for Surface Defect Detection***
Wen Yang, Hongjie Wu, Chenwei Tang and Jiancheng Lv (Sichuan University, China)

10:00 – 12:00
Neural Networks for Semantics: Part 1
Day4_AM_Rm7
Room: Room 6
Session Chair: Guozheng Rao and Chuanxin Song

10:00 ***BSDA in Visual Recognition: Balanced Semantic Data Augmentation for Long-Tailed Data***
Yifan Wang, Eaven Huang, Runan Wang and Tuo Leng (Shanghai University, China)

10:20 ***Learning Hierarchical Semantic Information for Efficient Low-Light Image Enhancement***
Wenfeng Huang (University of Technology Sydney & Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences, China); Xiangyun Liao and Yinling Qian (Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences, China); Wenjing Jia (University of Technology Sydney, Australia)

10:40 ***SSED: A Joint Model with Syntactic and Semantics for Event Detection***
Liming Pu and Guozheng Rao (Tianjin University, China); Li Zhang (Tianjin University of Science and Technology, China); Qing Cong (Tianjin University, China)

11:00 ***SILOP: An Automated Framework for Semantic Segmentation Using Image Labels Based on Object Perimeters***
Erik Ostrowski (Vienna University of Technology, Austria); Bharath Srinivas Prabakaran (Technische Universität Wien, Austria); Muhammad Shafique (NYU Abu Dhabi, United Arab Emirates)

11:20 ***Semantic Object Alignment and Region-Aware Learning for Change Captioning***
Weidong Tian, Quan Ren, Zhongqiu Zhao and Ruihua Tian (Hefei University of Technology, China)

11:40 ***SRRM: Semantic Region Relation Model for Indoor Scene Recognition***
Chuanxin Song and Xin Ma (Shandong University, China)

10:00 – 12:00
Neural Networks for Software Development
Day4_AM_Rm8
Room: Room 7
Session Chair: Manon Dampfhoffer

10:00 ***CEVulDet: A Code Edge Representation Learnable Vulnerability Detector***
Bitao Peng, Jinrong Zhang, Zhen Liu and Pengcheng Su (Guangdong University of Foreign Studies, China)

10:20 ***MHRGATSQL: Multi-Hop Relational Graph Attention Network for Text-To-SQL Parsing***
Hu Liu, Yuliang Shi and Jianlin Zhang (Shandong University, China); Xinjun Wang (ShanDong University, China); Hui Li and Fanyu Kong (Shandong University, China)

10:40 ***Decomposing Source Codes by Program Slicing for Bug Localization***
Yong Jian (China); Zhu Ziye (Ziye, China); Yun Li (Nanjing University of Posts and Telecommunications, China)

11:00 ***The Application of Generating API Call Sequence Code for Android Driven by Neural Network***
Jingbo Yang (Beihang University, China); Wenjun Wu (Institute of Artificial Intelligence Beihang University, China); Jian Ren (Beihang University, China)

11:20 ***Fine-Grained Similarity Matching with a Similarity Filtration Pyramid for Code Search***
Shun Yang and Cong Tan (Wuhan University, China)

11:40 ***Improving the Robustness of Neural Networks to Noisy Multi-Level Non-Volatile Memory-Based Synapses***
Manon Dampfhoffer (University of Grenoble Alpes, France); Joel Minguet Lopez (CEA-Leti, France); Thomas Mesquida (CEA-List, France); Alexandre Valentian (CEA, List, University Grenoble Alpes, France); Lorena Anghel (Spintec, France)

10:00 – 12:00
Special Session: Intelligent Vehicles and Transportation Systems (IVTS)
Day4_AM_Rm9
Room: Room 8
Session Chair: Tianming Qiu

10:00 ***Scene Understanding for Autonomous Driving Using Visual Question Answering***
Adrien Wantiez (Technical University of Munich, Germany); Tianming Qiu (Fortiss GmbH & Technical University of Munich, Germany); Stefan Matthes (Fortiss GmbH, Germany); Hao Shen (Technische Universität München, Germany)

10:20 ***CCH-YOLOX: Improved YOLOX for Challenging Vehicle Detection from UAV Images***
Zhuang Liu, Song Qiu and Mingsong Chen (East China Normal University, China); Dingding Han (Fudan University, China); Tiantian Qi, Qingli Li and Yue Lu (East China Normal University, China)

10:40 ***Context-Enhanced Meta-Reinforcement Learning with Data-Reused Adaptation for Urban Autonomous Driving***
Qi Deng (Inspur (Beijing) Electronic Information Industry Co., Ltd, China); Yaqian Zhao and Rengang Li (INSPUR, China); Qifu Hu, Tiejun Liu and Ruyang Li (Inspur (Beijing) Electronic Information Industry Co., Ltd, China)

11:00 ***LCDeT: LiDAR Curb Detection Network with Transformer***
Jian Gao and Haoxiang Jie (Neusoft Reach Automotive Technology (Shanghai) Ltd, China); Bingqing Xu (University of Science and Technology of China, China); Lifeng Liu, Jun Hu and Wei Liu (Neusoft Reach Automotive Technology (Shanghai) Ltd, China)

11:20 ***Viewpoint-Aware Channel Selection for Vehicle Re-Identification***
Shuai Han, Zhihao Wu, Youfang Lin and Kai Lv (Beijing Jiaotong University, China)

10:00 – 12:00
Virtual: Shape and Image Recognition
Day4_AM_RmV1
Room: Virtual Room 1
Session Chair: Chen Wang

10:00 ***HQProtoPNet: An Evidence-Based Model for Interpretable Image Recognition***
JingQi Wang (SouthWest University, China); Jiajie Peng (Northwestern Polytechnical University, China); Zhiming Liu and Hengjun Zhao (SouthWest University, China)

10:20 ***Deep Spiking Quantum Neural Network for Noisy Image Classification***
Debanjan Konar (Purdue University & CASUS - Center for Advanced Systems Understanding, Helmholtz Zentrum Dresden Rossendorf, USA); Aditya Das Sarma and Soham Bhandary (Jadavpur University, India); Siddhartha Bhattacharyya (RCC Institute of Information Technology, India); Attila Cangi (Helmholtz-Zentrum Dresden-Rossendorf, Germany); Vaneet Aggarwal (Purdue University, USA)

10:40 ***GLCNet: Global-Local Complementary Network for 3D Shape Recognition***
Xiaofeng Wang and Qingzhe Cui (Hefei University, China); Lixiang Xu (Germany, Germany); Haifeng Liu and Lixin He (Hefei University, China); Yuanyan Tang (University of Macau, China); Bin Luo and Sibao Chen (Anhui University, China)

11:00 ***GENet: Guidance Enhancement Network for 3D Shape Recognition***
Xiaofeng Wang and Qingzhe Cui (Hefei University, China); Lixiang Xu (Germany, Germany); Haifeng Liu and Lixin He (Hefei University, China); Sibao Chen and Bin Luo (Anhui University, China); Yuanyan Tang (University of Macau, China)

11:20 ***Handwritten Chinese Character Generation via Embedding, Decomposition and Discrimination***
Yuanyuan Zhang, Yonghong Song and Anqi Li (Xi'an Jiaotong University, China)

11:40 ***Spatially Exclusive Pasting: A General Data Augmentation for the Polyp Segmentation***
Zhou Lei (China)

10:00 – 12:00
Virtual: Deep Learning Theory: Part 2
Day4_AM_RmV2
Room: Virtual Room 2
Session Chair: Athanasios Tsiligkaridis and Heena Rathore

10:00 ***CEMDQN: Cognitive-Inspired Episodic Memory in Deep Q-Networks***
Satyam Srivastava (Birla Institute of Technology and Science, Pilani, India); Heena Rathore (Texas State University, USA); Kamlesh Tiwari (BITS Pilani, India)

10:20 ***Visually Analysing the Fairness of Clustered Federated Learning with Non-IID Data***
Li Huang (Tsinghua University, China); Weiwei Cui, Bin Zhu and Haidong Zhang (Microsoft Research Asia, China)

10:40 ***Neuron-Based Pruning of Deep Neural Networks with Better Generalization Using Kronecker Factored Curvature Approximation***
Abdolghani Ebrahimi (Wells Fargo, USA); Diego Klabjan (Northwestern University, USA)

11:00 ***Distilling Stereo Networks for Performant and Efficient Leaner Networks***
Rafia Rahim, Samuel Woerz and Andreas Zell (University of Tuebingen, Germany)

11:20 ***Self-Supervised Adversarial Imitation Learning***
Juarez Monteiro (Pontifical Catholic University of Rio Grande do Sul, Brazil); Nathan Schneider Gavenski (King's College London); Felipe Meneguzzi (Carnegie Mellon University, USA); Rodrigo C Barros (PUCRS, Brazil & Teia Labs, Brazil)

11:40 ***Diverse Gaussian Noise Consistency Regularization for Robustness and Uncertainty Calibration***
Theodoros Tsiligkaridis (MIT Lincoln Laboratory, USA); Athanasios Tsiligkaridis (Boston University, USA)

10:00 – 12:00
Virtual: Neural Networks for Pattern Recognition
Day4_AM_RmV3
Room: Virtual Room 3
Session Chair: Mengling Fan

10:00 ***Local and Global Context Modeling with Relation Matching Task for Dialog Act Recognition***
Yuke Si (Tianjin University, China); Yan Zhang (National University of Singapore, Singapore); Yuhang Li, Xiaobao Wang and Longbiao Wang (Tianjin University, China); Jianwu Dang (Advanced Institute of Science and Technology, Japan); Eng-Siong Chng (Nanyang Technological University, Singapore); Haizhou Li (National University of Singapore, Singapore)

10:20 ***Graph Neural Network with Virtual Edge Message Passing for Heterophilous Graphs***
Chengcheng Sun, Qiang Niu, Xiaobin Rui and Zhixiao Wang (China University of Mining and Technology, China)

10:40 ***Global and Adaptive Local Label Correlation for Multi-Label Learning with Missing Labels***
Qingxia Jiang, Peipei Li, Yuhong Zhang and Xuegang Hu (Hefei University of Technology, China)

11:00 ***A RoBERTa-GlobalPointer-Based Method for Named Entity Recognition of Legal Documents***
Xinrui Zhang (Guangxi Normal University, China); Xudong Luo (Guangxi Key Lab of Multi-Source Information Mining & Security Guangxi Normal University, China); Jiaye Wu (Guangxi Normal University, China)

11:20 ***Heterogeneous-Graph Attention Reinforcement Learning for Football Matches***
Shijie Wang (Institute of Automation, Chinese Academy of Sciences & School of Artificial Intelligence, University of Chinese Academy of Sciences, China); Yi Pan and Zhiqiang Pu (Institute of Automation Chinese Academy of Sciences, China); Jianqiang Yi (Institute of Automation, Chinese Academy of Sciences, China); Yanyan Liang and Du Zhang (Macau University of Science and Technology, China)

11:40 ***CCCSpell: A Consistent and Contrastive Learning Approach with Character Similarity for Chinese Spelling Check***
Jindian Su, Xiaobin Lin, Yunhao Xie and Zehua Cheng (South China University of Technology, China)

10:00 – 12:00
Virtual: Neural Network Applications: Part 2
Day4_AM_RmV4
Room: Virtual Room 4
Session Chair: Yanan Guo

10:00 ***Application of Improved Physics-Informed Neural Networks with Adaptive Mechanism for Solving Nonlinear Soliton Equation***
Yanan Guo (Naval Aviation University, China); Xiaoqun Cao and Kecheng Peng (National University of Defense Technology, China)

10:30 ***Explainable Restaurant Closure Prediction Through Co-Attentive Contrastive Learning***
Hao Cheng, Wei Zhang, Shuo Wang and Hao Liao (Shenzhen University, China)

11:00 ***Semantic-Reconstructed Graph Transformer Network for Event Detection***
Zhuochun Miao, Xingrui Zhuo, Gongqing Wu and Chenyang Bu (Hefei University of Technology, China)

11:30 ***Evolutionary Multitasking with Search Direction Alignment***
Wenhao Du, Zhigang Ren, An Chen, Hanqing Liu and Shenyu Su (Xi'an Jiaotong University, China); Muju Wang (China)

12:00 – 13:00
Lunch on your own

13:00 – 15:00
Image Generation and Analysis
Day4_PM1_Rm1
Room: Arena 1B
Session Chair: Deepthi Kuttichira

13:00 ***Referenceless User Controllable Semantic Image Synthesis***
Jonghyun Kim (LG Electronics & Sungkyunkwan University, Korea (South)); Gen Li (University of Edinburgh, Korea (South)); Joong-Kyu Kim (SungKyunKwan University, Korea (South))

13:20 ***PromptMix: Text-To-Image Diffusion Models Enhance the Performance of Lightweight Networks***
Arian Bakhtiarnia, Qi Zhang and Alexandros Iosifidis (Aarhus University, Denmark)

13:40 ***SFGAN: Style-Former GAN for Disentanglement in Image Generation***
Yunfeng Bai, Xin Huang and Peng Ren (Tongji University, China); Feng Tian (Duke Kunshan University, China); Jinyuan Jia (School of Software Engineering, Tongji University, China)

14:00 ***LisaCLIP: Locally Incremental Semantics Adaptation Towards Zero-Shot Text-Driven Image Synthesis***
An Cao, Yilin Zhou and Gang Shen (Huazhong University of Science and Technology, China)

14:20 ***Occlusion Robust 3D Human Pose Estimation with StridedPoseGraphFormer and Data Augmentation***
Soubarna Banik and Patricia Gschoßmann (Technical University of Munich, Germany); Alejandro Mendoza García (reFit Systems GmbH, Germany); Alois Knoll (Technical University Munich Garching, Germany)

14:40 ***IC-CViT: Inverse-Consistent Convolutional Vision Transformer for Diffeomorphic Image Registration***
Tao Xu (Sichuan Normal University & College of Computer Science, China); Ting Jiang and Xiaoning Li (Sichuan Normal University, China)

13:00 – 15:00
Neural Networks for Recommendations: Part 1
Day4_PM1_Rm2
Room: Arena 1A
Session Chair: Haokai Ma

13:00 ***Cross-Modal Content Inference and Feature Enrichment for Cold-Start Recommendation***
Haokai Ma (Shandong University & WeChat, Tencent, China); Zhuan
g Qi, Xinxin Dong, Xiangxian Li, Yuze Zheng, Xiangxu Meng and Lei Meng (Shandong University, China)

13:20 ***Recommendation with Dynamic Natural Language Explanations***
Xi Li, Jingsen Zhang, Xiaohe Bo, Lei Wang and Xu Chen (China)

13:40 ***BSQA: Bidirectional Stacked Question Answering Architecture for End-To-End Event Extraction***
Zetai Jiang, Sanchuan Tian and Fang Kong (Soochow University, China)

14:00 ***A Multi-Agent Framework for Recommendation with Heterogeneous Sources***
Yabin Zhang, Weiqi Shao and Xu Chen (Renmin University of China, China); Yali Du (King College London, UK); Xiaoxiao Xu and Dong Zheng (Kuaishou Technology, China); Changhua Pei (Chinese Academy of Sciences, China); Shuai Zhang and Peng Jiang (Kuaishou Technology, China); Kun Gai (Unaffiliated, China)

14:20 ***An Answer FeedBack Network for Visual Question Answering***
Weidong Tian, Ruihua Tian, Zhongqiu Zhao and Quan Ren (Hefei University of Technology, China)

13:00 – 15:00
Question-and-Answer Systems: Part 2
Day4_PM1_Rm3
Room: Foyer E
Session Chair: Munazza Zaib

13:00 ***UFO: Unified Fact Obtaining for Commonsense Question Answering***
Zhifeng Li (Soochow University, China); Bowei Zou (Institute for Infocomm Research, Singapore); Yifan Fan and Yu Hong (Soochow University, China)

13:20 ***Keeping the Questions Conversational: Using Structured Representations to Resolve Dependency in Conversational Question Answering***
Munazza Zaib and Quan Z. Sheng (Macquarie University, Australia); Wei Zhang (The University of Adelaide, Australia); Adnan Mahmood (Macquarie University, Australia)

13:40 ***Defending Machine Reading Comprehension Against Question-Targeted Attacks***
Xuanjie Fang and Wei Wang (Fudan University, China)

14:00 ***KEPR: Knowledge Enhancement and Plausibility Ranking for Generative Commonsense Question Answering***

Zhifeng Li (Soochow University, China); Bowei Zou (Institute for Infocomm Research, Singapore); Yifan Fan and Yu Hong (Soochow University, China)

14:20 ***Improving Visual Question Answering by Multimodal Gate Fusion Network***
Shenxiang Xiang, Qiaohong Chen, Xian Fang and Menghao Guo (Zhejiang Sci-Tech University, China)

14:40 ***EBAMQ: Exposure Bias Alleviation via Moment Matching for Question Generation***
Dong Liu, Yu Hong, Chuyao Ding, Jianmin Yao and Guodong Zhou (Soochow University, China)

13:00 – 15:00
Reinforcement Learning Algorithms: Part 2
Day4_PM1_Rm4
Room: Central Room B
Session Chair: Pin Tao and Nasik Muhammad Nafi

13:00 ***Pseudo Value Network Distillation for High Performance Exploration***
Enmin Zhao (University of Chinese Academy of Sciences, China); Junliang Xing (Tsinghua University, China); Kai Li and Yongxin Kang (University of Chinese Academy of Sciences, China); Pin Tao (Tsinghua University, China)

13:20 ***Elastic Step DDPG: A Novel Multi-Step Algorithm to Improve Sample Efficiency in Deep Deterministic Policy Gradient***
Adrian Ly and Richard Dazeley (Deakin University, Australia); Peter Vamplew (Federation University, Australia); Francisco Cruz (UNSW, Australia); Sunil Aryal (Deakin University, Australia)

13:40 ***Constrained Reinforcement Learning for Dynamic Material Handling***
Chengpeng Hu, Ziming Wang and Jialin Liu (Southern University of Science and Technology, China); Junyi Wen (Huawei Technologies, China); Bifei Mao (Huawei, China); Xin Yao (Southern University of Science and Technology, China)

14:00 ***Policy Optimization with Augmented Value Targets for Generalization in Reinforcement Learning***
Nasik Muhammad Nafi, Giovanni D. Poggi-Corradini and William H Hsu (Kansas State University, USA)

14:20 ***An Improved Trust-Region Method for Off-Policy Deep Reinforcement Learning***
Hepeng Li (University of Rhode Island, USA); Xiangnan Zhong (Florida Atlantic University, USA); Haibo He (University of Rhode Island, USA)

14:40 ***Dynamic Edge Caching via Online Meta-RL***
Yinan Mao (Tsinghua University, China); Shiji Zhou (Tsinghua Berkeley Shenzhen Institute, Tsinghua University, China); Haochen Liu (Nanyang Technological University, Singapore); Zhi Wang and Wenwu Zhu (Tsinghua University, China)

13:00 – 15:00
Text Classification with Neural Networks: Part 1
Day4_PM1_Rm5
Room: Central Room C
Session Chair: Fatim Zahra Habbab

13:00 ***Improved Word Sense Disambiguation via Prompt-Based Contextual Word Representation***
Qipeng He, Jian Zhang and Xueting Huang (Dongguan University of Technology, China)

13:20 ***Improved Text Classification with Adaptive Clustering Representations***
Yekun Chai (Baidu, China); Haidong Zhang, Qiyue Yin and Junge Zhang (Institute of Automation, Chinese Academy of Sciences, China)

13:40 ***Hybrid Data Augmentation for Citation Function Classification***
Yang Zhang, Yufei Wang and Quan Z. Sheng (Macquarie University, Australia); Adnan Mahmood (Macquarie University, Australia & TSSG, Science Foundation Ireland - CONNECT, Ireland); Wei Zhang (The University of Adelaide, Australia); Rongying Zhao (Wuhan University, China)

14:00 ***An Improved Branch Entropy Based Method for Chinese New Words***
Yan Guo, Yuying Zhu, Mingyang Hu and Shuiyuan Ding (University of Science and Technology of China, China)

14:20 ***AdaptParse: Adaptive Contextual Aware Attention Network for Log Parsing via Word Classification***
Haitian Yang (Institute of Information Engineering, Chinese Academy of Sciences, China); Degang Sun (Chinese Academy of Sciences, China)

14:40 ***A Deep Fusion Model for Human vs. Machine-Generated Essay Classification***
Roberto Corizzo (American University, USA); Sebastian Leal-Arenas (University of Pittsburgh, USA)

13:00 – 15:00
Transformers: Part 2
Day4_PM1_Rm6
Room: Room 5
Session Chair: Timo Lohrenz

13:00 ***Auto-TabTransformer: Hierarchical Transformers for Self and Semi Supervised Learning in Tabular Data***
Akshay Sethi (Mastercard, AI Garage, India); Sonia Gupta, Ayush Agarwal, Nancy Agrawal and Siddhartha Asthana (Mastercard, India)

13:20 ***Relaxed Attention for Transformer Models***
Timo Lohrenz, Björn Möller, Zhengyang Li and Tim Fingscheidt (Technische Universität Braunschweig, Germany)

13:40 ***Flexible BERT with Width- and Depth-Dynamic Inference***
Ting Hu, Christoph Meinel and Haojin Yang (Hasso Plattner Institute, Germany)

14:00 ***Adaptive Hybrid Vision Transformer for Small Datasets***
Zhiyong Chang (Peking University, China); Mingjun Yin (The University of Melbourne, China)

14:20 ***A Hierarchical Vision Transformer Using Overlapping Patch and Self-Supervised Learning***
Yaxin Ma, Ming Li and Jun Chang (Wuhan University, China)

13:00 – 15:00
Neural Networks for Semantics: Part 2
Day4_PM1_Rm7
Room: Room 6
Session Chair: Jiazhou Zheng

13:00 ***Image-To-Image Translation on Defined Highlighting Regions by Semi-Supervised Semantic Segmentation***
Ching-Yu Chang, Chun-Ting Ye and Tzer-Jen Wei (National Yang Ming Chiao Tung University, Taiwan)

13:20 ***Improving Math Word Problems Solver with Logical Semantic Similarity***
Lu Ting, Haitao Jiang, Shan Chang and Guohua Liu (Donghua University, China)

13:40 ***Facial Image Manipulation via Discriminative Decomposition of Semantic Space***
Jiazhou Zheng, Hiroaki Aizawa and Takio Kurita (Hiroshima University, Japan)

14:00 ***CL-CSP: Contrastive Learning with Continuous Semantic Perturbations for Neural Dialogue Generation***
Zhiping Liang (University of Melbourne, China); Haolan Zhan (Monash University, Australia)

14:20 ***A Mixture of Experts with Adaptive Semantic Encoding for Event Detection***
Zhongqiu Li, Yu Hong, Shiming He, Shuai Yang and Guodong Zhou (Soochow University, China)

14:40 ***Towards Few-Shot Image Captioning with Cycle-Based Compositional Semantic Enhancement Framework***
Peng Zhang and Yang Bai (Durham University, United Kingdom (Great Britain)); Jie Su (Newcastle University, United Kingdom (Great Britain)); Yan Huang (Institute of Automation Chinese Academy of Sciences, China); Yang Long (Durham University, United Kingdom (Great Britain))

13:00 – 15:00
Training Techniques for Deep Neural Networks: Part 1
Day4_PM1_Rm8
Room: Room 7
Session Chair: Rinor Cakaj

13:00 ***Schatten p-Norm Based Image-To-Video Adaptation for Video Action Recognition***
Ganesh Krishnasamy and Sharana Dharshikgan (Monash University Malaysia, Malaysia); Raveendran Paramesran (University of Malaya, Malaysia); Raphael C.-W. Phan (Monash University, Malaysia)

13:20 ***Deep Kernel Regression with Finite Learnable Kernels***
Chunlin Ji and Yuhao Fu (Kuang-Chi Institute of Advanced Technology, China)

13:40 ***PointNorm: Dual Normalization is All You Need for Point Cloud Analysis***
Shen Zheng (Carnegie Mellon University & Wenzhou-Kean University, USA); Jinqian Pan (New York University, USA); Changjie Lu and Gaurav Gupta (Wenzhou-Kean University, China)

14:00 ***A Feature Engineering Method for Machine Learning Inspired by Quantum Mechanics***
Juntao Zhang (AMS, China); Peng Cheng (Coolanyp LLC, USA); Zehan Li (University of Electronic Science and Technology of China, China); Hao Wu (AMS & Institute of System Engineering, China); Wenbo An (China); Jun Zhou (AMS, China)

14:20 ***Spectral Batch Normalization: Normalization in the Frequency Domain***
Rinor Cakaj (University of Stuttgart & Robert Bosch GmbH, Germany); Jens Eric Markus Mehnert (Robert Bosch GmbH, Germany); Bin Yang (University of Stuttgart, Germany)

14:40 ***Entropy Transformer Networks: A Learning Approach via Tangent Bundle Data Manifold***
Pourya Shamsolmoali (East China Normal University, China); Masoumeh Zareapoor (Shanghai Jiao Tong University, China)

13:00 – 15:00
Special Session: Lifelong Learning: Recent Advances and Challenges
Day4_PM1_Rm9
Room: Room 8
Session Chair: Isabel Amigo and Sebastian Basterrech

13:00 ***Mutually Promoted Hierarchical Learning for Incremental Implicitly-Refined Classification***
Guangzhi Zhao, Yuting Hou and Kedian Mu (Peking University, China)

13:20 ***Connection-Based Knowledge Transfer for Class Incremental Learning***
Guangzhi Zhao and Kedian Mu (Peking University, China)

13:40 ***Toward Industrial Use of Continual Learning: New Metrics Proposal for Class Incremental Learning***
Mohamed Abbas Konate (University of Clermont Auvergne & MICHELIN, France); Pierre Bouges (MICHELIN, France); Anne Françoise Yao and Thierry Chateau (UCA, France)

14:00 ***Transformed-*: A Domain-Incremental Lifelong Learning Scenario Generation Framework***
Dominik Żurek (AGH University of Science and Technology, Poland); Roberto Corizzo (American University, USA); Michał Karwatowski, Marcin Pietroń and Kamil Faber (AGH University of Science and Technology, Poland)

14:20 ***Open-World Lifelong Graph Learning***
Marcel Hoffmann (University of Ulm, Germany); Lukas Galke (Max Planck Institute for Psycholinguistics, Germany); Ansgar Scherp (Ulm University, Germany)

14:40 ***Online Continual Learning for Control of Mobile Robots***
Andriy Sarabakha and Zhongzheng Qiao (Nanyang Technological University, Singapore); Savitha Ramasamy (Institute for Infocomm Research & Agency for Science, Research and Technology, Singapore); Ponnuthurai Nagaratnam Suganthan (Qatar University, Qatar)

13:00 – 15:00
Virtual: Image Processing with Neural Networks: Part 2
Day4_PM1_RmV1
Room: Virtual Room 2
Session Chair: Chengkai Ren and Qiaoping He

13:00 ***BIT: Improving Image-Text Sentiment Analysis via Learning Bidirectional Image-Text Interaction***
Xingwang Xiao, Yuanyuan Pu, Zhengpeng Zhao, Jinjing Gu and Dan Xu (Yunnan University, China)

13:20 ***Vision Graph Convolutional Network for Writer-Independent Offline Signature Verification***
Chengkai Ren, Jian Zhang and Hongwei Wang (Zhejiang University, China); Shuguang Shen (Research Institute of Nuclear Power Operation, China)

13:40 ***Strip-Cutmix for Person Re-Identification***
Sun Yuxiang and Ke Qi (GuangZhou University, China); Zhou Yicong (University of Macau, USA); Yutao Qi (Guangzhou Huali College, China)

14:00 ***A Multi-Feature Integration Descriptor for Effective Image Retrieval***
Qiaoping He (Guangxi Normal University, China)

14:20 ***Interactive Capsule Networks with a Novel Dynamic Routing Mechanism for Implicit Discourse Relation Recognition***
Jing Xu, Ruifang He and Haodong Zhao (Tianjin University, China)

14:40 ***Deep Multi-Resolution Network for Real-Time Semantic Segmentation in Street Scenes***
Yalun Wang, Shidong Chen, Huicong Bian and Qin Lu (Qilu University of Technology (Shandong Academy of Sciences), China); Weixiao Li (China Mobile Communication Group Co Ltd, China)

13:00 – 15:00
Virtual: Robustness of Deep Neural Networks
Day4_PM1_RmV2
Room: Virtual Room 1
Session Chair: Liu Yang and Chenyu Liu

13:00 ***Two-Stage Neural Architecture Optimization with Separated Training and Search***
Longze He and Boyu Hou (Chongqing University, China); Junwei Dong (Chongqing, China); Liang Feng (Chongqing University, China)

13:20 ***Interesting Near-Boundary Data: Inferring Model Ownership for DNNs***
Zhe Sun, Zongwen Yang, Zhongyu Huang, Yu Zhang and Jianzhong Zhang (Nankai University, China)

13:40 ***Evaluating Robustness Against Adversarial Attacks: A Representational Similarity Analysis Approach***
Chenyu Liu (National University of Singapore, Singapore)

14:00 ***RCN: Rules-Constrained Network for Autonomous Driving Scene Recognition***
Mingrui Che and Liu Yang (Tianjin University, China); Yuxin Zhang (Renmin University of China, China)

14:20 ***RGAT: A Deeper Look into Syntactic Dependency Information for Coreference Resolution***
Yuan Meng, Xuhao Pan, Jun Chang and Yue Wang (Shanghai University of International Business and Economics, China)

14:40 ***Finding Cycles in Graph: A Unified Approach for Various NER Tasks***
Liang Qiao (Zhejiang University, China); Pengfei Li (Xi an Jiaotong University, China); Ting Jin (Hainan University, China); Xi Li (Zhejiang University, Indonesia)

15:00 – 15:30
Coffee Break
Room: Hall 1

15:30 – 16:30
Impacts of the NSF CAREER Award Panel
Room: Arena 1B

Anthony Kuh
Gregory Ditzler
Haibo He
G. Kumar Venayagamoorthy
Donald Wunsch
Hao Xu

16:30 – 18:30
Anomaly Detection Using Neural Networks
Day4_PM2_Rm1
Room: Arena 1B
Session Chair: Bin Li

16:30 ***A Multi-Modal Approach for the Detection of Account Anonymity on Social Media Platforms***
Bo Wang (Shanghai Jiao Tong University, China & Shenzhen Goodix Technology Co., Ltd., China); Jie Guo (Shanghia Jiao Tong University, China); Zheng Huang and Weidong Qiu (Shanghai Jiaotong University, China)

16:50 ***Contrastive Time Series Anomaly Detection by Temporal Transformations***
Bin Li (TU Dortmund University, Germany); Emmanuel Müller (TU Dortmund, Germany)

17:10 ***Pros and Cons of Weight Pruning for Out-Of-Distribution Detection: An Empirical Survey***
Satoru Koda (Fujitsu Limited, Japan); Alon Zolfi, Edita Grolman and Asaf Shabtai (Ben-Gurion University of the Negev, Israel); Ikuya Morikawa (Fujitsu Limited, Japan); Yuval Elovici (Ben-Gurion University, Israel)

17:30 ***Online Trajectory Anomaly Detection Based on Intention Orientation***
Chen Wang (University of Melbourne, Australia); Sarah M. Erfani and Tansu Alpcan (The University of Melbourne, Australia); Christopher Leckie (University of Melbourne, Australia)

17:50 ***Explainable Sequential Anomaly Detection via Prototypes***
He Cheng (Utah State University, USA); Depeng Xu (University of North Carolina at Charlotte, USA); Shuhan Yuan (Utah State University, USA)

16:30 – 18:30
Neural Networks for Recommendations: Part 2
Day4_PM2_Rm2
Room: Arena 1A
Session Chair: Amanda Maria Horzyk

16:30 ***FedPDD: A Privacy-Preserving Double Distillation Framework for Cross-Silo Federated Recommendation***
Sheng Wan and Dashan Gao (Hong Kong University of Science and Technology & Southern University of Science and Technology, China); Hanlin Gu (Webank Company, Hong Kong); Daning Hu (Southern University of Science and Technology, China)

16:50 ***A Multi-Modal Multi-Task Based Approach for Movie Recommendation***
Subham Raj (Indian Institute of Technology, Patna, India); Prabir Mondal (National Institute of Technology, Patna, India); Daipayan Chakder (Indian Institute of Technology Patna, India); Sriparna Saha (IIT Patna & Department of CSE, India); Naoyuki Onoe (Sony Research India Pvt. Ltd., India)

17:10 ***Relation-Aware Graph Attention Network for Multi-Behavior Recommendation***
Ming Wu, Qiufen Ni and Jigang Wu (Guangdong University of Technology, China)

17:30 ***Dual Channel Heterogeneous Hypergraph Neural Network for Global Citation Recommendation***
Xiaohong Li, Shanshan Wang, Ruihong Li and Jin Yao (NorthWest Normal University, China)

17:50 ***HTP: Exploiting Holistic Temporal Patterns for Sequential Recommendation***
Rui Chen, Guotao Liang, Chenrui Ma and Qilong Han (Harbin Engineering University, China); Li Li (University of Delaware, USA); Xiao Huang (The Hong Kong Polytechnic University, China)

18:10 ***Generating Questions via Unexploited OCR Texts: Prompt-Based Data Augmentation for TextVQA***
Mingjie Han, Ting Jin and Wancong Lin (Hainan University, China); Can Li (Shanghai JiaoTong University, China); Liang Qiao (Zhejiang University, China)

16:30 – 18:30
Explainable AI
Day4_PM2_Rm3
Room: Foyer E
Session Chair: James Burton

16:30 ***McXai: Local Model-Agnostic Explanation as Two Games***
Yiran Huang, Nicole Schaal, Michael Hefenbrock, Yexu Zhou and Till Riedel (Karlsruhe Institute of Technology, Germany); Michael Beigl (KIT & TECO, Germany)

16:50 ***Embedding the Self-Organisation of Deep Feature Maps in the Hamburger Framework Can Yield Better and Interpretable Results***
Jack R Humphreys and Markus Hagenbuchner (University of Wollongong, Australia); Zhiyong Wang (The University of Sydney, Australia); Ah Chung Tsoi (University of Wollongong, Australia)

17:10 ***Natural Language Explanations for Machine Learning Classification Decisions***
James Burton and Noura Al Moubayed (Durham University, United Kingdom (Great Britain)); Amir Enshaei (Newcastle University, United Kingdom (Great Britain))

17:30 ***Variance Tolerance Factors for Interpreting All Good Neural Networks***
Sichao Li and Amanda S Barnard (Australian National University, Australia)

17:50 ***Feature Selection for Regression Tasks Base on Explainable Artificial Intelligence Procedures***
Piotr A. Kowalski (Al. Mickiewicza 30 & AGH University of Science and Technology, Poland); Maciej Walczak (AGH University of Science and Technology, Poland)

18:10 ***GCN-Based End-To-End Model for Comparative Opinion Quintuple Extraction***
Qingting Xu and Yu Hong (Soochow University, China); Fubang Zhao and Kaisong Song (Alibaba DAMO Academy, China); Jiaxiang Chen (Soochow University, China); Yangyang Kang (Alibaba DAMO Academy, China); Guodong Zhou (Soochow University, China)

16:30 – 18:30
Spiking Neural Networks
Day4_PM2_Rm4
Room: Central Room B
Session Chair: Anmol Biswas

16:30 ***Time Series Prediction and Anomaly Detection with Recurrent Spiking Neural Networks***
Yann Cherdo (LEAT (CNRS) & Renault Software, France); Benoit Miramond (University Cote d'Azur / LEAT / CNRS UMR 7248, France); Alain Pegatoquet (LEAT, France)

16:50 ***E-STDP: A Spatio-Temporally Local Unsupervised Learning Rule for Sparse Coded Spiking Convolutional Autoencoders***
Vineet Kotariya and Anmol Biswas (IIT Bombay, India); Udayan Ganguly (Indian Institute of Technology Bombay, India)

17:10 ***Learning to Classify Faster Using Spiking Neural Networks***
Pranav Machingal (Indian Institute of Technology Bombay, India); P. Md. Thousif (Indian Institute of Science Bangalore, India); Shirin Dora (Loughborough University London, United Kingdom (Great Britain)); V Sundaram Suresh (Indian Institute of Science, India); Qinggang Meng (Loughborough University, United Kingdom (Great Britain))

17:30 ***A Character-Level Short Text Classification Model Based on Spiking Neural Networks***
Chengzhi Jiang (Institute of Automation, Chinese Academy of Sciences & School of Artificial Intelligence, University of Chinese Academy of Sciences, China); Li Linjing (Institute of Automation, Chinese Academy of Sciences, China); Daniel Dajun Zeng (Institute of Automation, Chinese Academy of Sciences & School of Artificial Intelligence, University of Chinese Academy of Sciences, China); Xiaoxuan Wang (Institute of Automation, Chinese Academy of Sciences, China)

17:50 ***Experience-Dependent Axonal Plasticity in Large-Scale Spiking Neural Network Simulations***
Lars Niedermeier (Switzerland); Jeffrey Krichmar (University of California Irvine, USA)

18:10 ***FABLE: A Develoment and Computing Framework for Brain-Inpspired Learning Algorithms***
Meng Pang, Yuchen Li, Youhui Zhang and Zhaolin Li (Tsinghua University, China)

16:30 – 18:30
Text Classification with Neural Networks: Part 2
Day4_PM2_Rm5
Room: Central Room C
Session Chair: Xueming Yan

16:30 ***Neural Architecture Search with Heterogeneous Representation Learning for Zero-Shot Multi-Label Text Classification***
Liang Chen (South China University of Technology, China); Xueming Yan (Guangdong University of Foreign Studies, China); Zilong Wang and Han Huang (South China University of Technology, China)

16:50 ***AfriWOZ: Corpus for Exploiting Cross-Lingual Transfer for Dialogue Generation in Low-Resource, African Languages***
Tosin Adewumi (Luleå University of Technology, Sweden); Mofetoluwa Adeyemi and Aremu Anuoluwapo (Masakhane, Sweden); Bukola Peters (CIS, Sweden); Happy Buzaaba, Oyerinde Samuel, Amina Mardiyyah Rufai, Benjamin Ajibade, Tajudeen Gwadabe and Mory Moussou Koulibaly Traore (Masakhane, Sweden); Tunde Oluwaseyi Ajayi (Masakhane, Sweden & Insight Centre for Data Analytics, University of Galway, Ireland); Shamsuddeen Muhammad (Masakhane, Sweden); Ahmed Baruwa (University of Oregon, Sweden); Paul Owoicho and Tolulope Ogunremi (Masakhane, Sweden); Phylis Ngigi (Jomo Kenyatta University of Agriculture and Technology, Kenya); Orevaoghene Ahia and Ruqayya Nasir (Masakhane, Sweden); Foteini Liwicki (Luleå University of Technology, Sweden); Marcus Liwicki (Lulea University of Technology, Sweden)

17:10 ***CAMVR: Context-Adaptive Multi-View Representation Learning for Dense Retrieval***
Zhilin Liao (Zhejiang University & Hundsun Technologies INC., China); Xiangting Hou (Zhejiang University & Hundsun Technologies Inc., China); Dongfang Lou (Hundsun Technologies Inc., China); Yi-Ming Chen (HUNDSUN Technologies INC., China); Ningyu Zhang (Zhejiang University, China)

17:30 ***Combining Hierarchical Graphs and Dual Attention to Classify Short Text***
Xiaohong Li, Ben You, Shaojie Feng and Xingjun Guo (NorthWest Normal University, China)

17:50 ***An Unseen Features Enhanced Text Classification Approach***
Nesar Ahmad Wasi (South Asian University, India); Muhammad Abulaish (South Asian University, New Delhi, India)

18:10 ***High Resolution Image Classification with Rich Text Information Based on Graph Convolution Neural Network***
Siyi Han (Fudan University, China); Jing Zhou (Renmin University of China, China); Xuening Zhu and Zhe Li (Fudan University, China); Jie Liu (Hohai University, China); Hansheng Wang (Peking University, China); Yibing Gong (Beijing Ledi Yitian Technology, China)

16:30 – 18:30
Neural Networks for Communications
Day4_PM2_Rm6
Room: Room 5
Session Chair: Zeyu Wang

16:30 ***Leveraging Node Attributes for Link Prediction via Meta-Path Based Proximity***
Xiaoyan Feng and Mingyang Dai (University of Chinese Academy of Sciences, China)

16:50 ***A Unified Framework of Deep Neural Networks and Gappy Proper Orthogonal Decomposition for Global Field Reconstruction***
Xiaoyu Zhao, Zhiqiang Gong, Xiaoqian Chen, Wen Yao and Yunyang Zhang (Chinese Academy of Military Science, China)

17:10 ***FA-Net: More Accurate Encrypted Network Traffic Classification Based on Burst with Self-Attention***
Minghao Jiang (Institute of Information Engineering, CAS & University of Chinese Academy of Sciences, China); Mingxin Cui (Institute of Information Engineering, Chinese Academy of Sciences, China); Chengshang Hou (Schools of of Cyber Security, University of Chinese Academy of Sciences & Institute of Information Engineering, Chinese Academy of Sciences, China); Wei Cai (Institute of Information Engineering, CAS, School of Cyber Security, University of CAS, China); Zhen Li and Gang Xiong (Institute of Information Engineering, Chinese Academy of Sciences, China); Gaopeng Gou (Institute of Information Engineering, Chinese Academy of Sciences, China)

17:30 ***Neural Network-Based Traffic Matrix Prediction Incorporating Inter-Flow Correlations for Optical Network-On-Chip (ONoC)***
Jiahe Zhao and Hui Li (Xidian University, China); Feiyang Liu (Xi an Aeronautics Computing Technique Research Institute, AVIC, China)

17:50 ***A Robust Two-Dimensional DOA Estimation Approach Based on Convolutional Attention Network***
Rui Xiao (Tongji University, China); Ming-yi You (Science and Technology on Communication Information Security Control Laboratory, China); Rui Zhou (Shenzhen Research Institute of Big Data, China); Qingjiang Shi (Tongji University, China)

18:10 ***Cooperation Skill Motivated Reinforcement Learning for Traffic Signal Control***
Jie Xin, Jing Zeng, Ya Cong, Weihao Jiang and Shiliang Pu (Hikvision Research Institute, China)

16:30 – 18:30
Reservoir Networks and Muti-Objective Learning
Day4_PM2_Rm7
Room: Room 6
Session Chair: Tian Gan and Rafael Claro Ito

16:30 ***OFA²: A Multi-Objective Perspective for the Once-For-All Neural Architecture Search***
Rafael Claro Ito (University of Campinas & Recod.ai - LBiC, Brazil); Fernando J Von Zuben (State University of Campinas & School of Electrical and Computer Engineering, Brazil)

16:50 ***Towards Sharper Risk Bounds for Agnostic Multi-Objectives Learning***
Bojian Wei and Jian Li (Institute of Information Engineering, China); Weiping Wang (Institute of Information Engineering, Chinese Academy of Sciences, China)

17:10 ***Combining Multiple Inputs to a Delay-Line Reservoir Computer: Control of a Forced Van der Pol Oscillator System***
Tian Gan, Susan Stepney and Martin Trefzer (University of York, United Kingdom (Great Britain))

17:30 ***A Novel Hardware-Efficient Liquid State Machine of Non-Simultaneous CA-Based Neurons for Spatio-Temporal Pattern Recognition***
Kentaro Takeda (Kagawa University, Japan); Hiroyuki Torikai (Hosei University, Japan)
17:50 ***Time-Multiplexed Reservoir Computing with Percolating Networks of Nanoparticles***
Joshua B Mallinson and Simon A Brown (University of Canterbury, New Zealand)

18:10 ***Consensus Based Distributed Kernel One-Class Support Vector Machine for Anomaly Detection***
Tianyao Wang, Fan He, Ruikai Yang, Xiaolin Huang and Zhixing Ye (Shanghai Jiao Tong University, China)

16:30 – 18:30
Training Techniques for Deep Neural Networks: Part 2
Day4_PM2_Rm8
Room: Room 7
Session Chair: Ashfaqur Rahman

16:30 ***Neural Radiance Fields with Regularizer Based on Differences of Neighboring Pixels***
Kohei Fukuda (Japan); Takio Kurita and Hiroaki Aizawa (Hiroshima University, Japan)

16:50 ***Invariant and Sufficient Supervised Representation Learning***
Junyu Zhu (Wuhan University, China); Xu Liao (Duke-NUS Medical School, Singapore); Changshi Li and Yuling Jiao (Wuhan University, China); Jin Liu (Duke-NUS Medical School, Singapore); Xiliang Lv (Wuhan University, China)

17:10 ***Fruit Picker Activity Recognition with Wearable Sensors and Machine Learning***
Joel Dabrowski (Data61, CSIRO, Australia); Ashfaqur Rahman (CSIRO, Australia)

17:30 ***Distance Functions and Normalization Under Stream Scenarios***
Eduardo V. L. Barboza and Paulo Ricardo Lisboa de Almeida (Universidade Federal do Paraná, Brazil); Alceu Britto (PUCPR, Brazil); Rafael M. O. Cruz (École de Technologie Supérieure, Brazil)

17:50 ***Fair Selection Through Kernel Density Estimation***
Xiangyu Jiang, Yucong Dai and Yongkai Wu (Clemson University, USA)

18:10 ***Measuring Robustness of Deep Neural Networks from the Lens of Statistical Model Checking***
Hao Bu and Meng Sun (Peking University, China)

16:30 – 18:30
Special Session: Social Network Computation for Online Intelligence
Day4_PM2_Rm9
Room: Room 8
Session Chairs: Shan Xue and Jian Yang

16:30 ***OOA-UADS: Offline, Online, Analysis- an Unsupervised Anomaly Detection Solution for Multivariate Time Series***
Jin Fan, Zhanyu Si, Wang Zehao Wang and Sun Danfeng (Hangzhou Dianzi University, China); Jia Wu (Macquarie University, Australia); Huifeng Wu (Hangzhou Dianzi University, China)

16:50 ***Self-Supervised Signed Graph Attention Network for Social Recommendation***
Qin Zhao, Gang Liu, Fuli Yang and Ru Yang (Shanghai Normal University, China); Zuliang Kou (Shanghai Newtouch Software Company Limited, China); Dong Wang (Shanghai Institute of Technology, China)

17:10 ***Biased or Debiased: Polarization-Aware Embedding Learning from Social Media Knowledge Graph***
Yihong Zhang and Takahiro Hara (Osaka University, Japan); Lina Yao (University of New South Wales, Australia)

17:30 ***Two-Way Cross-Domain Recommendation with Central Social Influence***
Shuyi Zhang, Jing Li, Jun Chang, Mingfeng Wang and Kai Zhu (Wuhan University, China)

17:50 ***Generative Models Vs Discriminative Models: Which Performs Better in Detecting Cyberbullying in Memes?***
Raghav Jain, Krishanu Maity and Prince Jha (IIT Patna, India); Sriparna Saha (IIT Patna & Department of CSE, India)

18:10 ***Prompt-Learning for Cross-Lingual Relation Extraction***
Chiaming Hsu (Wuhan University, China); Changtong Zan (China University of Petroleum (East China), China); Liang Ding (JD Explore Academy & JD.com, China); Longyue Wang (Tencent AI Lab, China); Xiaoting Wang (JD.com & JD Intelligent Cities Research, China); Weifeng Liu (China University of Petroleum (East China), China); Fu Lin (Wuhan University, China); Wenbin Hu (Wuhan University, China & None, China)

IEEE World Congress on Computational Intelligence

WCCI 2024 Yokohama, Japan

June 30 – July 5, 2024

WCCI is the world's largest technical event on computational intelligence, featuring the three flagship conferences of the IEEE Computational Intelligence Society (CIS) under one roof: The International Joint Conference on Neural Networks (IJCNN), the IEEE International Conference on Fuzzy Systems (FUZZ-IEEE) and the IEEE Congress on Evolutionary Computation (IEEE CEC). WCCI 2024 will be held in Yokohama, Japan. Yokohama is a city that inspires academic fusion and multidisciplinary & industrial association. The Yokohama area boasts a number of universities, institutes and companies of advanced information technology, electronics, robotics, mobility, medicine and foods. WCCI 2024 held in this area will strongly inspire the attendees to imagine next-generation science and technology as the fusion of AI, physiology and psychology as well as a cooperation with intelligence-related industries.

IJCNN 2024 The International Joint Conference on Neural Networks (IJCNN) covers a wide range of topics in the field of neural networks, from biological neural networks to artificial neural computation.

IEEE CEC 2024 The IEEE Congress on Evolutionary Computation (IEEE CEC) covers all topics in evolutionary computation from theory to real-world applications.

FUZZ-IEEE 2024 The IEEE International Conference on Fuzzy Systems (FUZZ-IEEE) covers all topics in fuzzy systems from theory to real-world applications.

Call for Papers

Papers for IEEE WCCI 2024 should be submitted electronically through the Congress website at wcci2024.org, and will be refereed by experts in the fields and ranked based on the criteria of originality, significance, quality and clarity.

Call for Tutorials

IEEE WCCI 2024 will feature pre-Congress tutorials, covering fundamental and advanced topics in computational intelligence. A tutorial proposal should include title, outline, expected enrollment, and presenter/organizer biography. Inquiries regarding tutorials should be addressed to Tutorials Chairs.

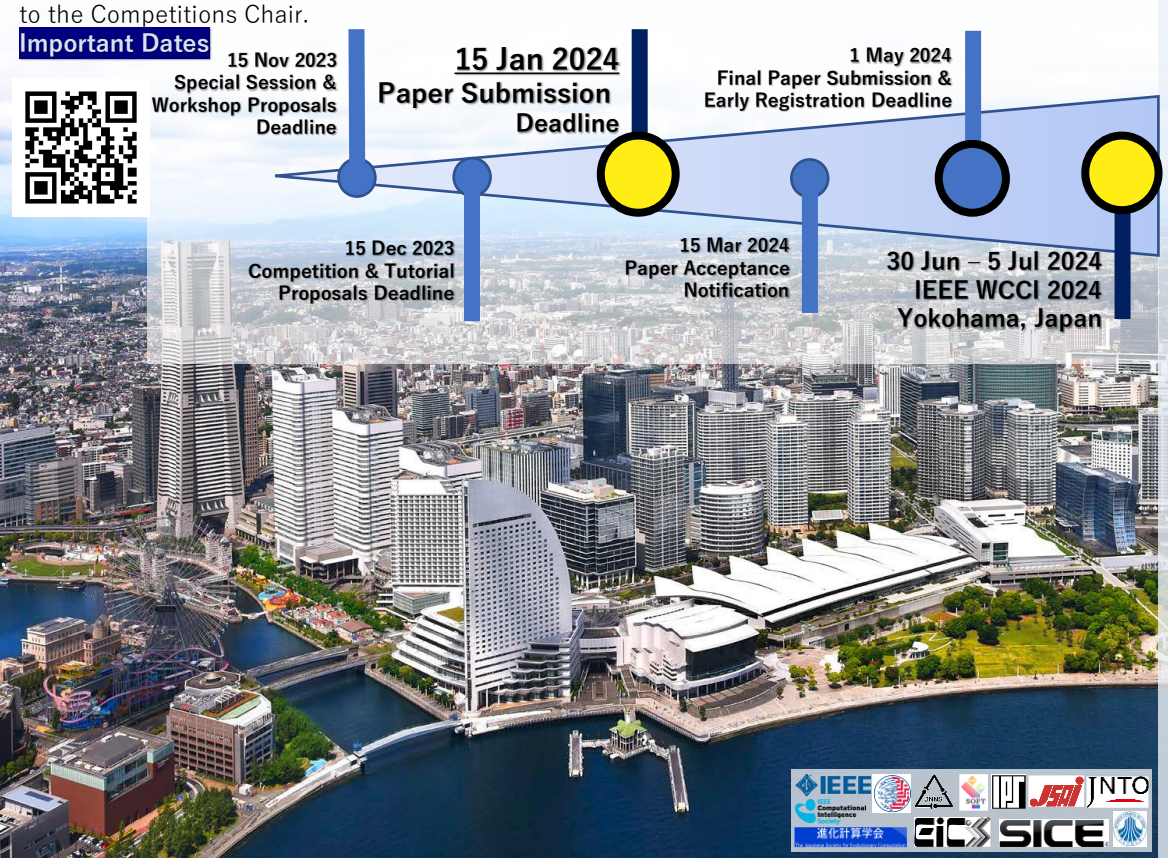
Call for Special Session Proposals

IEEE WCCI 2024 solicits proposals for special sessions within the technical scope of the three conferences. Special sessions, to be organized by internationally recognized experts, aim to bring together researchers in special focused topics. Cross-fertilization of the three technical disciplines and newly emerging research areas are strongly encouraged. Inquiries regarding special sessions and proposals should be addressed to Special Sessions Chairs.

Call for Competition Proposals

IEEE WCCI 2024 will host competitions to stimulate research in computational intelligence. A competition proposal should include descriptions of the problem(s) addressed, evaluation procedures, and a biography of the organizers. Inquiries regarding competitions should be addressed to the Competitions Chair.

Important Dates



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