



FIE 2023
COLLEGE STATION, TX, USA
OCTOBER 18-21, 2023



FIE 2023 CONFERENCE PROGRAM

Please visit our website
for more information!
2023.fie-conference.org

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TECHNICAL CO-SPONSORS & LOCAL HOSTS



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Welcome Message from the General Chairs



Howdy! It is our pleasure to welcome you to Aggieland, the Texas A&M University flagship campus in College Station, for the 53rd IEEE ASEE Frontiers in Education (FIE) International Conference! This year marks the first year the conference has been in person in the United States since 2020, and significant achievements for FIE, including a record number of abstract and paper submissions, as well as attendees.

In hosting this year's conference on such an expansive campus, we hope you'll find time to visit facilities like the George H.W. Bush Presidential Library & Museum, and the Memorial Student Center, or tour our many research and academic buildings on campus.

We have an impressive program for you this year, including multiple speakers from NSF, two keynote speakers, and an honorable speaker. FIE 2023 Keynote Speaker Dr. Leah Jamieson, Ransburg Distinguished Professor at Purdue University, will speak on *Reflections on Change in Engineering Education*. FIE 2023 Keynote Speaker Dr. Gary Bertoline, Distinguished Professor at Purdue University, will speak on *Engineering the Inclusive Mindset for the Future: A Blueprint for Systematic Change in Undergraduate Engineering & Engineering Technology Education*. FIE Honorable Speaker Dr. Idalis Villanueva Alarcón, associate professor at the University of Florida, will speak on *Seekers, Bridgers, and Agents of Hidden Curriculum in Engineering*. These talks, along with the rest of our program, will support this year's FIE theme of achieving excellence in *Engineering Education in a Diverse Global World*.

We also have several exciting social events to strengthen our FIE community ties. On Thursday, October 19, at 6 p.m., we invite you to explore historic Downtown Bryan, a recognized Texas Cultural District, and home to the highest concentration of unique and locally owned shops and restaurants in the Bryan-College Station area. Take a self-guided tour of the downtown area, explore the many beautiful shops, and have dinner at one of the fantastic restaurants. Then join us at the Historical Stafford Theater for drinks and live music starting at 8 p.m. This event's ticket will cover transportation to and from the Downtown Area, free entry to the Stafford Theater, and one complimentary drink.

On Friday, October 20, 6 - 9 p.m. join us for food, drinks, and music in the heart of the Texas A&M campus. The newly developed Aggie Park is just a five-minute walk from the conference venue. It hosts beautiful water features, an outdoor amphitheater, a performance pavilion, and plenty of places to sit, relax, and talk with other attendees. The event will include music, a buffet, a cash bar, and more. Your ticket includes a traditional Texas BBQ dinner and one complimentary drink.

It takes a mountain of dedicated individuals to put on a conference, and it has been a privilege for us to work with the staff and volunteers who have made this possible. We are deeply indebted to Noemi Mendoza Diaz and Saira Anwar for leading the six Technical Program Committee Members who managed the review process and compiled a fantastic program. From the Texas A&M support, a special thanks goes out to Amy Vance, Steven Begnaud, Drew Casey, Magda Lagoudas, and Anna Stepanova. Laura LeBlanc, and others from Conference Catalysts, LLC. deserve special applause for the infinite details they helped handle throughout the conference including awards, local arrangements, exhibits and industry relations, and publicity and public relations. Thank you to the Texas A&M College of Engineering and Texas A&M Engineering Experiment Station, as well as the students, faculty, and staff

within, for their continued support and sponsorship throughout the process. Finally, it is important to appreciate the commitment of the FIE Steering Committee, ASEE ERM Division, IEEE Education Society, and the IEEE Computing Society for their continued commitment to ensuring that FIE remains the premier international research conference on engineering education across the globe, ensuring we continue to push the boundaries of excellence in engineering education. We give a strong round of applause for all the volunteers that have worked tirelessly to make FIE 2023 an overwhelming success.

We are honored to have served as the general chairs of the conference this year and excited to host the FIE community. We hope you will experience and get to know the magic of Aggieland during your time here. Thank you all for being part of the FIE community and improving the world around us, one engineering education paper at a time.

Dr. Tracy Hammond
 Professor of Computer Science & Engineering
 Director of the Institute of Engineering Education & Innovation
 College of Engineering, Texas A&M University

Dr. Harry Hogan
 Professor of Mechanical Engineering
 Senior Associate Dean for Academic Affairs
 College of Engineering, Texas A&M University

Conference Organizers

General Planning Committee

GENERAL CONFERENCE CO-CHAIR

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GENERAL CONFERENCE CO-CHAIR

- Harry Hogan, Texas A&M University

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- Rosa M Vasconcelos, University of Minho

TPC (SR) MEMBER - IEEE EDUCATION SOCIETY REP

- Melany M. Ciampi, WCSEIT, IIE

Award Committee

HELEN PLANTS AWARD

- Rebecca Reck and Edmundo Tovar

DASHER BEST PAPER AWARD

- Jean Mohammadi-Aragh and Charles Wallace

NEW FACULTY FELLOWSHIP AWARD

- Racheida Lewis, Rosa Maria Castro, James Harland, and Michael De Miranda

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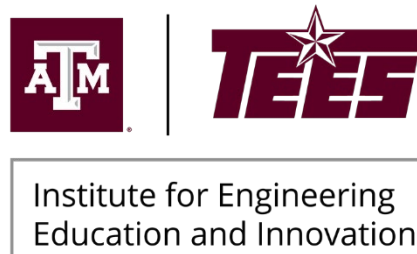
PUBLICITY & PUBLIC RELATIONS CO-CHAIR

- Amy Vance, Texas A&M University

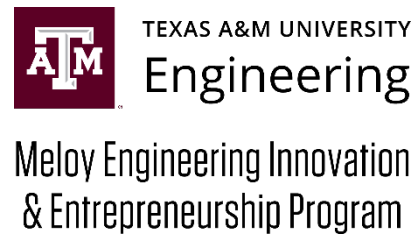
Conference Sponsors



Technical Co-Sponsors & Local Hosts



Exhibitors





PROGRAM AT A GLANCE

	WEDNESDAY OCT. 18, 2023	THURSDAY OCT. 19, 2023	FRIDAY OCT. 20, 2023	SATURDAY OCT. 21, 2023
8:00	Workshop Morning Session <i>Block 1</i>	Welcome and Keynote Presentation, Leah H. Jamieson	Keynote Presentation, Gary R Bertoline	Paper Presentations <i>Block #11</i>
8:30				
9:00		Paper Presentations <i>Block #3</i>	Panel Sessions <i>Block #7</i>	Coffee Break
9:30				
10:00				
10:30		Coffee Break	WIP Presentations <i>Block #12</i>	
11:00				
11:30		WIP Presentations <i>Block #4</i>	Paper Presentations <i>Block #8</i>	Posters, Student Panels, and Working Lunch
12:00				
12:30	TAMU Poster Presentation and Lunch	Lunch	Lunch & Award Ceremony	END
13:00				
13:30				
14:00	Workshop Afternoon Session <i>Block 2</i>	Special Sessions <i>Block #5</i>	Paper Presentations <i>Block #13</i>	
14:30				
15:00		Coffee Break & Showcase	Coffee Break	
15:30				
16:00	WIP Presentations <i>Block #14</i>	Paper Presentations <i>Block #10</i>		
16:30				
17:00				
17:30	Welcome Reception	Social Event <i>Downtown Bryan</i> <i>(tickets required)</i>	Social Event <i>AggiePark</i> <i>(tickets required)</i>	
18:00				
18:30				
19:00				
19:30				
20:00				
20:30				
21:00				

Venue

Texas A&M Hotel and Conference Center
 177 Joe Rouff Boulevard, College Station, Texas 77840

REGISTRATION WILL BE OPEN DAILY STARTING 30 MINUTES BEFORE THE FIRST SESSION

Exhibitors can set up on Thursday, October 19th from 8-10 AM.



The Doug Pitcock '49 Texas A&M Hotel and Conference Center is located on the beautiful and historic Texas A&M campus. Housed in a striking glass tower across from Kyle Field and near the Memorial Student Center, the hotel and conference center provides stunning accommodations to host current and former students and their parents, wedding celebrations, meetings and conferences, Aggie football fans and visitors doing business with the university.

Our College Station hotel is contemporary, luxurious and spacious, with AAA Four-Diamond rated 250 upscale guest rooms and suites, a stunning ballroom and expansive and flexible meeting rooms. The property features state-of-the-art technology and inspiring spaces bathed in natural light designed to meet the IACC (previously International Association of Conference Centers) approved conference facilities standards.

With multiple dining outlets featuring fresh, locally sourced, Texas-centric ingredients, plus free Wi-Fi, a fitness center, business center and more, the Texas A&M Hotel and Conference Center has everything today's discerning traveler needs for a restful and rejuvenating trip to College Station.

2023 IEEE UNDERGRADUATE TEACHING AWARD


Sponsored by the IEEE Education Society

CARLOTTA BERRY

For contributions to multidisciplinary robotics education and leadership in creating a national platform to diversify STEM

Carlotta Berry has a passion for increasing diversity in engineering. She is utilizing robotics and engineering education, as well as human-robot interaction research to bring STEM to diverse populations. She has built several organizations that reach out to women and marginalized and minoritized populations and encourage them to pursue STEM degrees. She founded the Rose Building Undergraduate Diversity (ROSE-BUD) program to increase the participation of underprivileged and underrepresented students in electrical and computer engineering. Berry worked with colleagues worldwide to start the nonprofits Black in Engineering and Black in Robotics that build community and advocate for diversity, equity, inclusion, and justice.


An IEEE Senior Member, Berry is the Rose Hulman Institute of Technology Lawrence J. Giacoletto Endowed Chair and professor for Electrical and Computer Engineering, Indiana, USA.

2023 IEEE TECHNICAL FIELD AWARD RECIPIENT 

"For contributions to multidisciplinary robotics education and leadership in creating a national platform to diversify STEM."

CARLOTTA BERRY

IEEE UNDERGRADUATE TEACHING AWARD

Sponsored by  **IEEE Education Society**

corporate-awards.ieee.org

Detailed Program – Wednesday, October 18th

9:00 - 12:00

W-1: Workshop Morning Session 1

Room: REVEILLE I

Learn how to design high-quality qualitative educational research! - A workshop for disciplinary STEM faculty by disciplinary STEM faculty

John R Morelock (University of Georgia, USA); Michelle Edith Jarvie-Eggart, PE (Michigan Technological University, USA); Heather Chenette (Rose-Hulman Institute of Technology, USA); Sara Hooshangi (Virginia Tech, USA); Betsy Chestnutt (University of Tennessee Knoxville, USA); Sarah Wilson (University of Kentucky, USA); Azadeh Bolhari (University of Colorado Boulder, USA); Kirsten Dodson (Lipscomb University, USA); Iglia Pavlova (University of North Carolina Greensboro, USA); Rebecca M. Reck (University of Illinois Urbana-Champaign, USA)

9:00 – 12:00

W-2: Workshop Morning Session 2

Room: TRADITIONS

Incorporating Agility into the Academic Department

Massood Towhidnejad, Omar Ochoa and James Pembridge (Embry-Riddle Aeronautical University, USA)

9:00 – 12:00

W-3: Workshop Morning Session 3

Room: CORPS I

What, So What, and Now What about Inclusive Mentoring for Diversity, Equity, and Inclusion?

Audrey Boklage (University of Texas at Austin, USA)

9:00 – 12:00

W-4: Workshop Morning Session 4

Room: CORPS II

Supporting Student Success by Embedding Personal Narratives in Engineering Courses

Eric Jankowski, Krishna Pakala and Sara Hagenah (Boise State University, USA)

9:00 – 12:00

W-5: Workshop Morning Session 5

Room: EAGLE

Designing and Running Project-Based Courses in Software Engineering Education (DREE)

Daqing Hou (Clarkson University, USA); David Shepherd (Louisiana State University, USA); Jan DeWaters, Yu Liu and Mary M Small (Clarkson University, USA)

Detailed Program – Wednesday, October 18th

9:00 – 12:00

W-NSF: Proposal Writing Workshop [NSF-HSI]

Room: REVEILLE II

HSI Proposal Writing Workshop

Sonja Montas-Hunter, Sonal Dekhane, Elsa Gonzalez, Frances Carter-Johnson

National Science Foundation's (NSF) Improving Undergraduate STEM Education: Hispanic Serving Institutions (HSI Program) is a congressionally mandated program established in 2017. This program is aligned with the NSF's commitment to a more diverse and capable science and engineering workforce. The HSI program is open to all HSIs, whether 2-year or 4-year, public or private. It aims to enhance the quality of undergraduate STEM education and increase the recruitment, retention and graduation of students pursuing undergraduate degrees in STEM. In this workshop, HSI program directors will provide an overview of the HSI program and guidance on writing competitive proposals. The workshop will focus on critical components of the proposal and the attendees will have an opportunity to understand NSF's merit review process. An NSF Education Data Scientist will also provide guidance on developing robust and effective evaluations. Additionally, attendees will have an opportunity to hear from PIs about their experiences writing a successful proposal and implementing a successful project.

12:00 - 1:00

L-3: Wednesday Lunch

Room: A&M Hotel Century Ballroom

12:00 - 2:00

TAMU-P: Texas A&M University Poster Session

Room: A&M Hotel Century Ballroom

Description: Posters on engineering education research and innovation from Texas A&M faculty and students

- 12:00 pm – 12:30 pm – Lunch.
- 12:30 pm – 1:00 pm – Featured Posters (3) Stage Presentations (continuing to eat lunch)
- 1:00 pm – 2:00 pm - Poster Discussions (among the posters)

Presentations:

"Where Did My Stomach Go?"

Andrew Conkey

Advancing Engineering Education: Investigating Effective Instructional Strategies and Promoting Educational Technological Innovations

Saira Anwar, Umer Farooq, Syeda Fizza Ali, Daniel Bang, Ayden Perez

Bringing Authenticity to Group Projects: Example from a Junior-Level Computer Science Course

Shawna Thomas, Robert Lightfoot

Detailed Program – Wednesday, October 18th

Empowering Workforce Capabilities: The Gulf Coast Center of Excellence's Educational Initiative

Digvijaysinh Barad, Umer Farooq, Saira Anwar, Matthew Elliott, Bryan Rasmussen

Enculturation and Computational Thinking

Noemi V. Mendoza Diaz, Deborah Trytten, Russ Meier

Engineering Education at the NUA2NCED Lab

Kristi Shryock

Engineering Enrichment Program for Qatar Aggies

Bilal Mansoor, Lana Ladki, Saira Anwar, Yasser Al-Hamidi

Industry Sponsored Capstones - Experiential Learning in Action

Pauline Wade

Monolithic Integration of Multi-Functional Complex-Oxides on Semiconductor for Integrated Photonics and Applications

Pao Tai Lin

Overview of Cyber-physical Systems Security and Intrusion Detection Systems

Hussein Alnuweiri, Ahmad Al-Khateed, Haitham Abu-Rub, Sertac Bayhan

Project-based Experiential Learning in a First-Year Engineering Programming Class Using the Engineering Design Cycle

Shana Shaw

Research Lifecycle & Publication in Engineering

Dianna Morganti

Research Tools to Educate Undergraduate Chemical Reaction Engineering, Catalysis, and Advanced Chemical Kinetics

Manish Shetty

SedimentSketch, Teaching Tool in and Beyond the Sedimentology Classroom

Anna Stepanova, Md Maklachur, Saira Anwar, Juan Carlos Laya, Carlos Alvarez Zarikiiiian, Tracy Hammond

Sketch Recognition Lab Research

Tracy Hammond

Solar Texas: Building Capacity for Passive Survivability on the Road to Net-Zero

Filza Walter, Zofia Rybkowski, Gregory Luhan

TCORPS: Teams for Creating Opportunities for Revolutionizing the Preparation of Students

Arun Srinivasa, Rujun Gao, Luis Rodriguez, Emma Erdoga, Cynthia Hipwell, Mindy Bergman, Karan Watson, Guillermo Aguilar

Detailed Program – Wednesday, October 18th

Teaching Online Labs at Texas A&M College of Engineering

Garth Crosby, Bugrahan Yalvac

The Effects of Formative Assessment on Students' Attitude Toward Learning and Design Skills: Perspective from a Senior-Level Design-Based Course

Muhammad Zilany, Iqra Yakub, Syed Ahmad

The Impact of 1-hr Bootcamp Course on Student Learning of a Biotransport Course

Hatice Ceylan Koydemir

The Impacts of TAMUS LSAMP Project: Over 30 years of Success

Karen Butler-Purry, Shannon Walton, John Avila, Niyazi Erdogan

UNITES: Undergraduate Improving Teamwork Skills

Jonathan Weaver-Rosen, Mohammad W Mohiuddin, Joanna Tsenn, Shadi Balawi, Carlos Corleto

Writing Assessment Training for Instructors

Joanna Tsenn, Jessie Cortez

2:00 – 3:20 PM

FIE Steering Opening Session

Room: *Hullabaloo*

2:00 - 5:00

W-6: Workshop Afternoon Session 6

Room: *REVEILLE II*

Preparing Competitive NSF Proposals of Engineering and Computing Education

Jumoke Ladeji-Osias, Abiodun Ilumoka, Christine Grant, Alexandra Medina-Borja, Subrata Acharya, Elsa Gonzalez, Sonal Dekhane and Huihui H Wang (National Science Foundation, USA)

2:00 – 5:00

W-7: Workshop Afternoon Session 7

Room: *CORPS I*

Articulating your Teaching Philosophy Statement and Portfolio: Connecting our Philosophies to Teaching

Frances Kalu (University of Doha for Science and Technology); Jean Layne (Texas A&M University, USA)

All participants are encouraged to bring a device (laptop or tablet) to work on during the workshop.

Detailed Program – Wednesday, October 18th

2:00 – 5:00

W-8: Workshop Afternoon Session 8

Room: CORPS II

How to become an inclusive leader

Meagan Pollock (Engineer Inclusion, USA)

2:00 – 5:00

W-9: Workshop Afternoon Session 9

Room: ROSS I

An IoT-Based CS Education Workshop for 9-12 and Undergraduate Students: Empowering the Next Generation of Technologists

Pramod Abichandani, Craig Iaboni and Prateek Shekhar (New Jersey Institute of Technology, USA)

2:00 – 5:00

W-10: Workshop Afternoon Session 10

Room: ROSS II

Exploring Virtual Reality Learning Environments

Randy Brooks and Edgar J Rojas-Muñoz (Texas A&M University, USA); Britain J Thomas (USA); Katherine S Bezanson and Lara Soberanis (Texas A&M University, USA)

2:00 – 5:00

W-11: Workshop Afternoon Session 11

Room: TRADITIONS

Using Personas as Holistic, Subjective Assessment Rubrics

Anastasia Rynearson (Campbell University, USA)

3:30 – 5:00 PM

FIE Steering Executive Session (closed meeting)

Room: Hullabaloo

5:30 - 7:30

WR: Welcome Reception

Room: A&M Hotel Century Ballroom

Detailed Program – Thursday, October 19th

8:00 - 8:15

Plen-1: Welcome & Introductory Remarks

Room: A&M Hotel Century Ballroom

Dr. Joe Elabd will open the conference with a welcome from Texas A&M University and the College of Engineering. Dr. Elabd holds multiple roles, including Vice Chancellor for Research for The Texas A&M University System, Interim Vice Chancellor and Dean of Texas A&M Engineering, and Interim Director of the Texas A&M Engineering Experiment Station.

Moderated by Tracy Hammond & Harry Hogan

8:15 – 9:15

Plen-1: Keynote Speaker, Leah H. Jamieson

Room: A&M Hotel Century Ballroom

Reflections on Change in Engineering Education

Leah H. Jamieson (Purdue University, USA)



Leah Jamieson is Ransburg Distinguished Professor of Electrical and Computer Engineering at Purdue, Professor by courtesy in Purdue's School of Engineering Education, and John Edwardson Dean Emerita of Engineering. She is co-founder and past director of the Engineering Projects in Community Service – EPICS – program, for which she was a co-recipient of the National Academy of Engineering (NAE) Gordon Prize for Innovation in Engineering and Technology Education. She was 2007 president of the IEEE, recently served as chair of the NSF Engineering Directorate's Advisory Committee, as co-chair of the Computing Research Association Committee on the Status of Women in Computing Research, and is currently co-organizer of the Women of NAE (National Academy of Engineering) activities. Her service on report committees includes the steering committee for the NAE report Changing the Conversation: Developing Effective Messages for Improving Public Understanding of Engineering (2008) and co-chair, with Jack Lohmann, of the ASEE report Innovation with Impact: Creating a Culture for Scholarly and Systematic Innovation in Engineering Education (2012). Jamieson is a member of the NAE and the American Academy of Arts & Sciences and a Fellow of IEEE and ASEE. She holds a BS mathematics from MIT, a PhD in EECS from Princeton, and has been awarded honorary doctorates from Drexel and the New Jersey Institute of Technology.

9:30 - 11:00

PP-1: Pedagogical and Instructional Approaches #1

Room: MSC 2406 A

Characterizing Intercultural Competence among Cybersecurity Majors

Aparajita Jaiswal (Purdue University, West Lafayette, USA); Paul J Thomas and Tugba Karabiyik (Purdue University, USA)

Student Team Formation Using SCRUM

Asad Azemi (University of Maryland Eastern Shore, USA); Xiaoguang Ma (University of Wisconsin-Platteville, USA)

Detailed Program – Thursday, October 19th

Remotely multi-collaboration for the online teaching of architectural design: A pilot study based on a distributed version control solution

Ze Zhang, Yuneng Jiang and Peiyao Zhang (Soochow University, China); Chen Qian (Tongji University, China)

Impact of Study Groups on Students' Learning and Engagement: Across Different Online Formats of a Web-development Course

Debarati Basu (Embry Riddle Aeronautical University, USA); Sarah Heckman (North Carolina State University, USA)

Cooperative Learning and Co-Regulation: Exploring Students' Teamwork Strategies in Higher Education

Sakhi Aggrawal, Cristancho A Jorge, Devang Atul Patel and Alejandra J. Magana (Purdue University, USA)

9:30 – 11:00

PP-10: Professional Practice & Attitudes and Perceptions

Room: OAK

Impact of COVID-19 Pandemic on International Research Collaboration: A Pilot Survey Results

Fatemeh Pariafsai, Manish Kumar Dixit and Sherecce Fields (Texas A&M University, USA)

Exploring Contributions of U.S. Engineering Education Research Centers

Gadhaun Aslam and Idalis Villanueva Alarcón (University of Florida, USA)

Foundational Digital Forensics Skills and Learning: Exemplifying Social Justice

Denise Dragos and Suzanna Schmeelk (St. John's University, USA)

Aligning Manufacturing Skills when Implementing Industry 5.0

Rajesh Krishnamurthy (Oklahoma State University, USA); Sharon Harrison (Oklahoma Manufacturing Alliance, USA)

Improving Teamwork in Software Engineering Projects in Higher Education

Ser Wee Darren Quek, Jared Kai Fu Teo, Nasruddine Louahemmsabah, Yap Boon Cyrus Tong and Aaron Zheng Rong Poh (University of Glasgow, Singapore); Qi Cao and Chee Kiat Seow (University of Glasgow, United Kingdom (Great Britain)); Peter Chunyu Yau (University of Glasgow, Singapore); Alex Q. Chen (Singapore Institute of Technology, Singapore)

Exploring Undergraduate Engineering Students' Changing Beliefs About Smartness in Engineering

Cassie Wallwey (Virginia Tech, USA); Amy Kramer, Rachel L. Kajfez and Emily Dringenberg (The Ohio State University, USA)

Detailed Program – Thursday, October 19th

9:30 – 11:00

PP-11: K12 STEM Education #1

Room: TRADITIONS

A Math+CS curriculum from the Education and Mathematics Pre-Service Teachers Perspectives

Paris Kalathas and Jennifer Parham-Mocello (Oregon State University, USA)

Digitizing the Draw-A-Scientist Test: Ushering Projective Tests into the 21st Century

Breonte S. Guy and Jinghua Zhang (Winston-Salem State University, USA); Stephanie T. Dance-Barnes (DePaul University, USA); Dawn N. Hicks Tafari, Kenneth J. Brown and Chad D. Markert (Winston-Salem State University, USA)

An Examination of Empirical Evidence Produced by a Decade of K-12 Computer Science Education Research

Julie M. Smith (CSEdResearch.org, USA); Monica M. McGill (CSEdResearch.org, USA & CSEdResearch.org, USA); Adrienne Decker (University at Buffalo, USA)

Comparative study of several educational robotics to introduce engineering and computing concepts for middle school and high school students

Sujing Wang and Stefan Andrei (Lamar University, USA)

Formal Specification in Basic Education: What does it take?

Braz A da Silva, Jr (Federal University of Pelotas, New Zealand); Simone A C Cavalheiro, Luciana Foss and Júlia Veiga da Silva (Federal University of Pelotas, Brazil)

Proposals for the promotion of computing in K-12 studies in Spain

David Lopez (Universitat Politècnica de Catalunya - BarcelonaTech, Spain); Faraón Llorens-Largo (Universidad de Alicante, Spain); Mercedes Marqués-Andrés (Universitat Jaume I, Spain); J. Ángel Velázquez-Iturbide (Universidad Rey Juan Carlos, Spain)

9:30 – 11:00

PP-2: Pedagogical and Instructional Approaches #2

Room: MSC 2406 B

Developing the numeric reasoning and mathematical modeling processes in engineering students using the LSEESC methodology

Daniel Sánchez Guzmán, Sr. and Erika Cervantes Juárez (Instituto Politécnico Nacional, Mexico)

Gamification in Computer Science Education: An Empirical Study of a Meme Contest

Daniel Lopez and Aldo Gordillo (Universidad Politécnica de Madrid, Spain); Edmundo Tovar (Universidad Politécnica de Madrid & Facultad de Informática, Spain); Pedro P. Alarcón (Universidad Politécnica de Madrid & UPM, Spain)

Detailed Program – Thursday, October 19th

A comparison of the usefulness of game-based learning and video-based learning for teaching software engineering in online environments

Aldo Gordillo and Daniel Lopez (Universidad Politécnica de Madrid, Spain); Edmundo Tovar (Universidad Politécnica de Madrid & Facultad de Informática, Spain); Jesús Mayor (Universidad Politécnica de Madrid, Spain)

Software Engineering Education through Experiential Learning for Fostering Soft Skills

Maria Lydia Fioravanti (University of São Paulo, Brazil & Universidad Politécnica de Madrid, Spain); Bruna Oliveira Romeiro (University of São Paulo, Brazil); Leo Natan Paschoal (University of Sao Paulo, Brazil); Brauner Oliveira, Simone Souza and Ellen Barbosa (University of São Paulo, Brazil); Ana Moreno (Universidad Politécnica de Madrid, Spain)

Chatbots in Educational Recommender Systems: A Systematic Literature Review

Paulo C. R. Pinho and Tiago Thompsen Primo (Universidade Federal de Pelotas, Brazil)

9:30 – 11:00

PP-3: Pedagogical and Instructional Approaches #3

Room: MSC 2405

Exploring Machine Learning Methods to Identify Similar Code Groups for Programming Course Feedback

Xiaojin Liu, Hugo Castellanos, Lucas Wiese and Alejandra J. Magana (Purdue University, USA)

DSLP: A Web-based Learning Platform for Teaching Data Science to Non-Computer Majors

Xumin Liu (RIT, USA); Erik F Golen and Rajendra Raj (Rochester Institute of Technology, USA); Kimberly Fluet (University of Rochester, USA)

Towards Race and Gender Equity in Data Science Education

Brendan Baird (University of California Davis); Namya Radesh and Setareh Rafatirad (University of California Davis, USA); Hossein Sayadi (California State University Long Beach, USA)

CyberExpert: Towards an Automated Framework for Cybersecurity Expertise Acquisition and Mastery

Eman Hammad (University of Toronto, Canada & Texas A&M University, USA); William Hatcher (Texas A&M University Commerce RELLIS, USA); Tyler Harrison and Truman Brown (Texas A&M University Commerce RELLIS, USA)

A comparison of Peer Instruction and Process Oriented Guided Inquiry Learning-like pedagogies in teaching Software Testing and DevOps

Bhuvana Gopal and Stephen Cooper (University of Nebraska-Lincoln, USA)

An analysis of a Gamification application for Teaching and Learning Knowledge Management under the Qualitative and Affective Computing Contexts

Antonilson Alcantara, Sandro Ronaldo Bezerra Oliveira, Elziane Soares, Igor Costa, Raimundo Viegas, Emanuel Rodrigues and Elisiane Soares (Federal University of Pará, Brazil)

Detailed Program – Thursday, October 19th

FicWebBoard: A Playful and Collaborative learning platform built for all people and all programming languages

Eddy Caron (ENS-Lyon, France); Nicolas Chappe (ENS de Lyon, France)

9:30 – 11:00

PP-4: Diversity and Broadening Participation #1

Room: REVEILLE I & II

Addressing Inequity in the Engineering Education Research Community: Asian Researchers' Signaling Strategies to Counter Discrimination

Li Tan (Arizona State University, USA); Yong Bian (Zhejiang GongShang University, USA); Beijia He (Zhejiang Gongshang University, USA); Xingchen Xu and Archit Junaghare (Arizona State University, USA)

Evolution of the participation of women in university Computer Science studies in Spain and in Europe

Angela Nebot and Francisco Mugica (Universitat Politècnica de Catalunya (UPC), Spain)

Bringing More Girls to STEM: Initiatives within the Frontiers in Education Conference

Isabela Makiolka Montingelli (Pontifícia Universidade Católica do Paraná, Brazil); Andreia Malucelli (Pontifícia Universidade Católica Paraná, Brazil); Sheila Reinehr (Pontifícia Universidade Católica do Paraná, Brazil); Carlos Silla (Pontifícia Universidade Católica do Paraná, Brazil)

Diversity in STEM+Computing MentorCorps Project

Shaoping Qiu (Texas A&M University); Malini Natarajarathinam, Francis Quek, Larry Powell, Ting Liu and Mehdi Gorjian (Texas A&M University, USA)

The Impact of High School Region Socioeconomic Status on Computer Science Student Performance

Jennifer Alexandra Thompson, Margaret Ellis and Sara Hooshangi (Virginia Tech, USA)

Diversity, Equity and Inclusion on STEM Education in Latin America

Sandra Milena Merchan-Rubiano (Centro de Diversidad, Equidad e Inclusión) and Juan Sebastián Sánchez-Gómez (Universidad El Bosque, Colombia); Andres E Acero (Tecnologico de Monterrey & Politecnico Grancolombiano, Mexico); Silvia B Garcia de Cajen, Sra. (Universidad Nacional del Centro de la Provincia de Buenos Aires & Catedra Abierta Latinoamericana Matilda y Las Mujeres En Ingeniería, Argentina)

Making engineering education more inclusive through the power of defaults

Matthew W Ohland (Purdue University, USA); Darryl Dickerson (Florida International University, USA); Stephanie Masta and Alice Pawley (Purdue University, USA)

Detailed Program – Thursday, October 19th

9:30 – 11:00

PP-5: Professional Development #1

Room: MSC 2404

An Industry-Academy Partnership to Bridge the SES Gap in Engineering Education

Pedro Quintero (University of Puerto Rico-Mayaguez, USA); Manuel Jimenez (University of Puerto Rico at Mayaguez, Puerto Rico); Carla Lopez del Puerto (University of Puerto Rico - Mayaguez, USA); Aidsa I. Santiago-Román and Sonia Bartolomei (University of Puerto Rico at Mayaguez, Puerto Rico); Luisa Guillemard (University of Puerto Rico - Mayaguez, Puerto Rico); Nayda G. Santiago (University of Puerto Rico, Mayaguez, USA); Nelson Cardona and Oscar Marcelo Suarez (University of Puerto Rico - Mayaguez, Puerto Rico)

Enhance undergraduate research by incorporating an entrepreneurial mindset

Maysam Nezafati (Georgia Institute of Technology, USA); Irene Reizman (Rose Hulman Institute of Technology, USA); Mary Lauren Benton (Baylor University, USA); John Peponis (Lawrence Technological University, USA); Michelle K Marincel Payne (Rose-Hulman Institute of Technology, USA); Blake Johnson (University of Illinois, USA); Kenneth Van Treuren (Baylor University, USA); Liping Liu (Lawrence Technological University, USA)

Expectations of Skills and Knowledge in Traditional and Non-Traditional Industries for Chemical Engineering Graduates

Ifeoluwa Priscilla Babalola (Texas A&M University, USA); Samantha Shields (Texas A&M University & Center for Teaching Excellence, USA); Debra Fowler (Texas A&M University, USA); Victor Ugaz (Texas A&M University, USA)

The Evolution of Team Coordination Commitments in the Context of Computational Projects

Joreen Arigye, Abasiafak Ndifreke Udosen, Joshi Parth Pravin and Alejandra J. Magana (Purdue University, USA)

Understanding the Data Needs for Developing a Computational Model of Team Dynamics

Novia Fan and Bowen Hui (University of British Columbia, Canada)

Student perceptions of teamwork, conflict, and industry preparedness in engineering interdisciplinary capstone design

Lisa Schibelius, Olivia Ryan and Susan Sajadi (Virginia Tech, USA); Mark Huerta (Virginia Tech & 33 Buckets, USA)

9:30 – 11:00

PP-6: Curriculum and Course Development #1

Room: CORPS I & II

Engineering Student Perspectives of a New Required Programming Course

Jennifer Parham-Mocello, Jessica Garcia and Madelyn Sadler (Oregon State University, USA)

Detailed Program – Thursday, October 19th

Moving Beyond VHDL in Introductory Computer Architecture Courses: An Exploration of MyHDL as a Modern Alternative

Rafael Corsi Ferrao, Igor S Montagner and Renan Trevisoli (Insper, Brazil)

Analysis of Vlog Transcripts using Topic Modeling, Summarizer, and Cluster Analysis

Upmanyu Singh (The George Washington University, USA); Tiffany-Rose Sikorski (Graduate School of Education and Human Development, GWU, USA); Erica Wortham (George Washington University USA, USA); Ekundayo Shittu (The George Washington University, USA)

Rankings vs Realities: Exploring Competency Differences in Graduate Data Science Programs

Duo Li (Shenyang Institute of Technology, China); Elizabeth Milonas (CUNY New York City College of Technology, USA); Qiping Zhang (Long Island University, USA)

Penetration Testing and Ethical Hacking: Risk Assessments and Student Learning

Suzanna Schmeelk and Denise Dragos (St. John's University, USA)

Promoting students' cognitive ability to identify human error-prone scenarios in program

Fuqun Huang (University of Coimbra, Portugal)

9:30 – 11:00

PP-7: Curriculum and Course Development #2

Room: ROSS I & II

Development of a Training Framework for Novel Accelerators

Zhenhua He (Texas A&M University, USA); Sandra B Nite, Abhinand Nasari and Hieu Le (Texas A&M University, USA); Jian Tao (Texas A&M University & Louisiana State University, USA); Dhruva Chakravorty, Lisa Perez and Honggao Liu (Texas A&M University, USA)

Towards Digital Skills for All Pre-service Teachers: Collecting Good Curricular Practices

Roland Ambros (University of Vienna, Austria); Dominik Dolezal and Renate Motschnig (University of Vienna, Austria)

Teaching Data Science to Non-Computer Science Students: A Learner-Centered Approach

Yllka Velaj and Dominik Dolezal (University of Vienna, Austria); Roland Ambros (University of Vienna, Austria); Claudia Plant (University of Vienna & DS UniVie, Austria); Renate Motschnig (University of Vienna & Faculty of Computer Science, Austria)

Use of SecureED as a Tool for Software Security Education: An Experience Report

Yi Liu (University of Massachusetts Dartmouth, USA); Onyeka Ezenwoye (Augusta University, USA)

Case Studies in Applying Design Thinking to Course Design in Computer Engineering

Diane Rover, Henry Duwe, Phillip Jones, Nicholas D Fila and Mani Mina (Iowa State University, USA)

Detailed Program – Thursday, October 19th

9:30 – 11:00

PP-8: Education Level #1

Room: EAGLE

Employing a nuclear engineering case study to teach foundational concepts in Engineering Design and Innovation

Tina Baradaran and Mitchell Torok (University of New South Wales, Australia); Michael Myers (REA Foundation, Australia); Nicholas Gilmore, Ilpo Koskinen and Edward Obbard (University of New South Wales, Australia)

A Meta-Analysis of STEM Bridge Programs at Four-Year Colleges

Tram Dang (Purdue University & Santa Monica College, USA); Joyce B. Main and Dan DeLaurentis (Purdue University, USA)

Automating source code plagiarism detection in a Moodle-based programming course

Rodrigo Cardoso Aniceto (Universidade de Brasília, Brazil); Maristela Holanda (Texas A&M University, USA); Dilma Da Silva (Texas A&M University, USA)

9:30 – 11:00

PP-9: Computing #1

Room: HULLABALOO

A Systematic Literature Review on Performance Prediction in Learning Programming Using Educational Data Mining

Choi Wan-Chong (Macao Polytechnic University, Macao); António José Mendes (University of Coimbra & CISUC, Dep. of Informatics Engineering, Portugal); Chan-Tong Lam (Macao Polytechnic University, Macao)

EduBoost: An Interpretable Grey-Box Model Approach to Identify and Prevent Student Failure and Dropout

Andy Qin (Plano West Senior High School, USA); Mihai Boicu (GMU, USA)

Performance Comparison between Sentiment Classification Models for Use in Chatbots in Virtual Learning Environments

Isadora Santos (Universidade Federal do Rio Grande - FURG & Centro de Ciências Computacionais, Brazil); Regina Barwaldt (Federal University of Rio Grande (FURG), Brazil & Center of Computational Sciences (C3), Brazil); Anderson Anderson Santos (Universidade Federal do Rio Grande - FURG, Brazil); Jeferson S Oliveira (Federal University of Rio Grande, Brazil); Luis Otoni Ribeiro (Universidade Federal do Rio Grande - FURG, Brazil)

Enhancing Team Attendance Tracking in TBL Classes: A Comparative Study of LiDAR and Camera-based Systems

Joseph Zuber, Ahmed M. Nazar, Ashraf Gaffar and Mohamed Y. Selim (Iowa State University, USA)

Detailed Program – Thursday, October 19th

Expanding Quantitative Approaches in Engineering Education Research: Embracing Empirical Bayes for Longitudinal Person-Centered Analysis

Xingchen Xu (Arizona State University, USA); Siqing Wei (Purdue University, USA); Li Tan (Arizona State University, USA)

FAIRifying STEM Data Ecosystem to Enhance Data Reuse

Phub Namgay (Uppsala University & Royal University of Bhutan, Sweden); Pema Wangdi, Sangay Thinley and Thinley Namgyal (Royal University of Bhutan, Bhutan)

Applying Educational Data Mining to Classify Students in an Intelligent Tutoring System for Algebra Instruction

Matheus F Menezes, José Francisco Magalhães, Netto and Arcanjo Lopes (Federal University of Amazonas, Brazil); Fabiann Matthaus Barbosa (Federal University of Amazonas and Federal Institute of Amazonas, Brazil)

11:00 - 11:30

B-1: Thursday Morning Break

Room: Second Floor Foyer & MSC 2401

11:30 - 1:00

WIP-1: Pedagogical and Instructional Approaches #4 [WIP]

Room: MSC 2406 A

Being Brave in a New World: Leveraging ChatGPT in Signal Processing Classes

Mahesh Banavar, Lavanya Shri, Nicholas Sparks and Alexander Cohen (Clarkson University, USA)

Eliciting student understanding in Structural Engineering Classrooms using Natural Language Models and Image Generation

Rolando Chacón (Universitat Politècnica de Catalunya, Spain); Homero Murzi (Virginia Tech, USA); Camilo Vieira (Universidad del Norte, Colombia)

Opening the Machine Learning Black Box for Multidisciplinary Students: Scaffolding from GUI to Coding

Mariana Arboleda and Camilo Vieira (Universidad del Norte, Colombia); Jennifer L Chiu (University of Virginia, USA)

Unleashing the Potential of Reinforcement Learning for Enhanced Personalized Education

Chelsea Fernandes (California State University Long Beach, USA); Tahereh Miari (California State Polytechnique University, USA); Setareh Rafatirad (University of California Davis, USA); Hossein Sayadi (California State University Long Beach, USA)

Integrating Generative AI with Evidence-based Learning Strategies in Computer Science and Engineering Education

Paula Lauren (Lawrence Technological University, USA); Paul Watta (University of Michigan-Dearborn, USA)

Detailed Program – Thursday, October 19th

Advancing Cybersecurity through Knowledge Conversion: Industry-Academia Interchange in a Doctoral Program

Andrew O. Hall, Michelle Liu and Diane Murphy (Marymount University, USA)

11:30 – 1:00

WIP-10: Diversity and Broadening Participation #3 [WIP]

Room: ROSS II

A Qualitative Exploration of an Assets-Based Approach to Building Engineering Transfer Student Capital

Kristin Frady and Randi J Sims (Clemson University, USA)

Exploring the Impact of a Supportive Scholarship Program on Engineering Transfer Students' Learning Strategies

David A Copp (University of California, Irvine, USA); Anna-Lena Dicke (University of California Irvine, USA); Kameryn Denaro (University of California, Irvine, USA); Hye Rin Lee (University of Delaware, USA); Matthew Wolken (Irvine Valley College, USA); Analia Rao and Lorenzo Valdevit (University of California Irvine, USA)

WIP: Exploring the racialization of Latinos/as/xs in the U.S. Southwest and its implications on deficit ideologies in engineering education

Joel Alejandro Mejia (The University of Texas at San Antonio, USA)

Collaborative Institutional Efforts to Promote Hispanic Representation Across Computer Science

Mariana Alvidrez (New Mexico State University, USA); Jessica Rivera (The University of Texas - El Paso); Ann Gates (University of Texas at El Paso, USA); Sanga Kim and Elsa Villa (The University of Texas at El Paso, USA); Christian Teran Lopez (The University of Texas - El Paso); Karina Enriquez (The University of Texas- El Paso)

Democratizing engineering education: An online Bachelor of Science in Engineering degree

Nick A. Stites (University of Colorado - Boulder, USA); Janet L Yowell, Rhonda Hoenigman, William Kuskin and Abigail B Rose (University of Colorado Boulder, USA)

Co-Op Based Engineering Education Model Supporting Students in Engineering Education Deserts

Catherine McGough Spence and Jennifer Karlin (Minnesota State University, Mankato, USA); Eric James (Minnesota State University Mankato, USA)

11:30 – 1:00

WIP-11: K12 STEM Education #2 [WIP]

Room: REVEILLE I

A Topic Modeling Approach to Characterizing Colombian Teachers' Conceptions of Computational Thinking

Hugo Castellanos (Purdue University, USA); Camilo Vieira (Universidad del Norte, Colombia); Alejandra J. Magana (Purdue University, USA)

Detailed Program – Thursday, October 19th

Increasing Accessibility to Problem-Solving: A Skills-Focused Curriculum for High School Students

Alex Phan, Maysoon Dong and Curt Schurgers (University of California San Diego, USA)

Conducting Successful Virtual STEM Outreach

Colleen Bailey, Nicholas Chiapputo and Arthur Depoian II (University of North Texas, USA)

¿Funciona? Impact of FIRST robotics programs on minority students

Pilar Gonzalez (The University of Texas at El Paso, USA); Virgilio Gonzalez (University of Texas at El Paso, USA)

Navy STEM challenges: Innovative labs and activities with SONAR

Joni Corbin and Joni M. Lakin (University of Alabama, USA); Sathish Akula, Cheryl Seals and Edward Davis (Auburn University, USA)

An Ontology for Computer Science Student Profile

Sunny K. O. Miranda and Maria José Marcelino (University of Coimbra, Portugal); Paula Alexandra Silva (University of Coimbra Portugal, Portugal)

Culturally Relevant Areas of Opportunity for K-12 Computing Lessons

Jane Waite (Raspberry Pi Foundation & University of Cambridge, United Kingdom (Great Britain)); Anjali Das, Yujeong Hwang and Sue Sentance (University of Cambridge, United Kingdom (Great Britain))

11:30 – 1:00

WIP-12: K12 STEM Education #3 [WIP]

Room: REVEILLE II

Towards a Framework for Learning Content Analysis in K-12 AI/ML Education

Jane Waite (Raspberry Pi Foundation & University of Cambridge, United Kingdom (Great Britain)); Ethel Tshukudu (University of Botswana, Botswana); Veronica Cucuiat and Robert Whyte (Raspberry Pi Foundation, United Kingdom (Great Britain)); Sue Sentance (University of Cambridge, United Kingdom (Great Britain))

Work-In-Progress: Investigate Eye-tracking Metrics and Effectiveness of Visual Learning Aids in Online Learning Environments for Students with Learning Disabilities using Machine Learning

Yuexin Liu (Texas A&M University, USA); Wei Lu (Texas A&M University, USA); Amir Tofighi Zavareh and Ben Zoghi (Texas A&M University, USA)

STEM Training for Primary School Teachers with Remote Labs

Matthias Haack and Jutta Mägdefrau (University of Passau, Germany)

Engineering Human Body for Systematic and Computational Thinking

Chengzhang Zhu, Jeong Eun Ahn, Gina Tang, LuoBin Cui and Ryan Hare (Rowan University, USA)

Detailed Program – Thursday, October 19th

Combining Gamification and Intelligent Tutoring Systems for Engineering Education

Ryan Hare and Gina Tang (Rowan University, USA)

11:30 – 1:00

WIP-13: Education Level #2 [WIP]

Room: EAGLE

Learning nuclear engineering in the workplace: Developing an understanding of on-the-job training of nuclear engineers in Australia

Tina Baradaran and Jennifer Stansby (University of New South Wales, Australia); Mihail Ionescu (Australian Nuclear Science and Technology Organisation, Australia); Chris Saint (Babcock International Group, Australia); Ilpo Koskinen and Edward Obbard (University of New South Wales, Australia)

Survey as a tool to identify the learning styles and strategies of first semester engineering students a review of Kolb's test and cognitive metacognitive and motivational learning

Kevin Sleider Pabon Lobo, Sara M Quintero, Julian O Tarazona and Miguel A García (University Francisco de Paula Santander, Colombia)

Work-In-Progress: Preliminary Work Introducing Automated Code Critiques in First-Year Engineering MATLAB Programming

Laura Albrant, Pradnya Pendse, Mary E Benjamin, Michelle Edith Jarvie-Eggart, PE and Jon Sticklen (Michigan Technological University, USA); Laura Brown (Michigan Tech, USA); Leo C. Ureel II (Michigan Technological University, USA)

Work in Progress: Comparing Metrics of Student Success Across Academic Fields

Susan M. Lord (University of San Diego, USA); Russell A Long and Matthew W Ohland (Purdue University, USA); Marisa K. Orr (Clemson University, USA); Richard A Layton (Layton Data Display, USA)

The design process of the "ApeLab": a Fablab on wheels

Francesca Fiore and Alberto Montresor (University of Trento, Italy)

11:30 – 1:00

WIP-2: Pedagogical and Instructional Approaches #5 [WIP]

Room: MSC 2406 B

Research to Practice of Blended Learning in Computer Programming Course

Liang Buaa Zhang, Tianyi Chen, Yue Zong and Lijun Zhang (Beihang University, China)

Exploring the types of instructional practices used in a story-driven learning engineering classroom

Hye Yeon Lee and Joseph M. Le Doux (Georgia Institute of Technology, USA)

Detailed Program – Thursday, October 19th

Advanced Training in Industrial Robotics using Project-Based Learning and Design Thinking in a partnership between the university and industry

Jose Pinheiro Queiroz Neto (IFAM, Brazil); Micila Pereira (Federal Institute of Amazonas, Brazil); Jeanne Moreira de Sousa, Profa. (Instituto Federal de Educação & Ifam, Brazil); Nelson Alexandre Gouvea (LG Electronics do Brasil, Brazil)

Creating Tangible VR Spaces for Exploring Algorithm Complexity and Data Structures

Nathan Green (Marymount University, USA)

Cultivating Computational Thinking Through Game-Based Learning

Kelli Adam, Robert Lightfoot and Mahjabin Chowdhury (Texas A&M University, USA); Jonan P Donaldson (Oregon State University, USA)

What is Convergence?: A systematic review of the definition of and aspects of convergent work

Michael S. Thompson, R. Alan Cheville, Rebecca L Thomas, Stewart Thomas, Sarah Appelhans and Robert Nickel (Bucknell University, USA); Philip Asare (University of Toronto, Canada)

11:30 – 1:00

WIP-3: Pedagogical and Instructional Approaches #6 [WIP]

Room: MSC 2405

A framework for predicting the students at risk using AI and ML: A case study

Ramalingam Dharmalingam and Sowmya Baskar (Majan University College, Oman)

A Framework for an Intelligent Adaptive Education Platform for Quantum Cybersecurity

Ruchitha Mallipeddi, Chris Schaaf and Mahadevan Subramaniam (University of Nebraska at Omaha, USA); Abhishek Parakh (Kennesaw State University); Sherri Weitl-Harms (Creighton University & University of Nebraska at Kearney, USA)

Virtual Field Trip of the Central Heating and Chiller Plant as an Instructional Tool for Thermodynamics Education

Oai Ha (University of Wisconsin - Stout, USA); Seth Berrier and Keif Oss (University of Wisconsin-Stout, USA)

Developing Virtual Laboratory Modules for Broadening Experiential Learning in Engineering Education

Can Uysalel, Anshal Jain and Andrew Copeland (University of California San Diego, USA); Zachary Fox (UC San Diego, USA); Farbod Khoshnoud (California State Polytechnic University Pomona, USA); Maziar Ghazinejad (University of California San Diego, USA)

Computational Notebooks in a Finite Element Analysis Course: Engineering Students' Reflections on the Value and Challenges of Computational Approaches

Camilo Vieira (Universidad del Norte, Colombia); David Restrepo (The University of Texas at San Antonio, USA); Jose L. De La Hoz (Universidad del Norte, Colombia)

Detailed Program – Thursday, October 19th

Assessing the Importance of Video Visualization Timings in a Flipped Classroom Context

Martín Liz-Domínguez and Manuel Caeiro-Rodríguez (University of Vigo, Spain); Fernando Mikic-Fonte (Universidad de Vigo, Spain); Martín Llamas-Nistal (Atlanttic - University of Vigo, Spain)

11:30 – 1:00

WIP-4: Professional Development #2 [WIP]

Room: MSC 2404

Core Competencies for Construction Project Management: Perception of the Global Academia

Fatemeh Pariafsai and Manish Kumar Dixit (Texas A&M University, USA); Stephen Mark Caffey and Edelmiro F. Escamilla (Texas A&M University, USA); Sherecce Fields (Texas A&M University, USA)

Integrating Cloud-Based AI in Software Engineers' Professional Training and Development

Patrick Wolfschwenger, Barbara Sabitzer and Zsolt Lavicza (Johannes Kepler University, Austria)

Improving Engineering Students' Success Using Academic Coaching

Reza Kamali-Sarvestani (California State University San Marcos, USA)

WIP: Using System Dynamics to Model and Analyze Interdisciplinary Teamwork

Chulin Chen and Courtney J Faber (University of Tennessee, USA)

11:30 – 1:00

WIP-5: Curriculum and Course Development #3 [WIP]

Room: CORPS I

Development of a π -shaped undergraduate curriculum using a curriculum continuity checkup process coupled with an iterative application of Kotter's change model

Charles Patrick, Jr. and Michael McShane (Texas A&M University, USA)

NKU Applied Software Engineering Program: A Novel Approach to Software Engineering Education

Samuel Sungmin Cho, Nicholas Caporusso and Maureen Doyle (Northern Kentucky University, USA)

Implementing sustainability and resilience in an undergraduate construction management curriculum: Student's knowledge and attitude

Dazhi Yang (Boise State, USA); Bhaskar Chittoori, Karen Krier and Kirsten Davis (Boise State University, USA)

A Decade-Spanning Longitudinal Study on the Curricular Complexity of Engineering Programs

David Reeping and Nahal Rashedi (University of Cincinnati, USA)

A Novel Methodology for Assessing Mechanical, Electrical, and Civil Engineering Programs With an Emphasis on Institutional Type

Lance L. A. White (Texas A&M University, USA); Tracy Hammond (Texas A&M University, USA); Karan Watson (Texas A&M University, USA)

Detailed Program – Thursday, October 19th

STEM Course Enhancement - Animated Safety modules for Freshman Circuit Class

Iftekhhar I Basith, Suleiman Obeidat and Vajih Khan (Sam Houston State University, USA); Sumith Yesudasan (University of New Haven, USA)

11:30 – 1:00

WIP-6: Curriculum and Course Development #4 [WIP]

Room: CORPS II

Technical writing method based on a three-point analysis and a slide-first principle

Akihiko K. Sugiyama (Yahoo Japan Corporation, Japan)

New concept of Innovation management education at graduate school

Koichiro Kato (Kanazawa Institute of Technology, Japan); Megumi Sako (Waseda University, Japan); Takako Akakura (Tokyo University of Science, Japan)

A semi-automatic knowledge discovery tool to identify and visualize course bottlenecks

Md. Nour Hossain (Indiana University Kokomo, USA); Mohammad Hasan (Purdue University Indianapolis, USA); Michael J Nelson (Indiana University Kokomo, USA); Enamul Enamul Haque (University of Waterloo, Canada)

Online Electrical Engineering Labs with Collaborative Open-Ended Assignments

Selahattin Sayil, Gleb Tcheslavski, Julia Yoo and Yuyao Wang (Lamar University, USA)

Preliminary Results of Modular Embedded Tool Implementation

Francis Pellicano, Christopher J Martinez and Maria-Isabel Carnasciali (University of New Haven, USA)

11:30 – 1:00

WIP-7: Computing #2 [WIP]

Room: HULLABALOO

Insights into Student Attention during Online Lectures: A Classification Approach Using Eye Data

Kritika Johari and Hui-Ching Chen (Singapore University of Technology and Design); W. Quin Yow (Singapore University of Technology & Design, Singapore); U-Xuan Tan (Singapore University of Technology and Design, Singapore)

Recognizing and Responding to Human Emotions: A Survey of Artificial Emotional Intelligence for Cooperative Social Human-Machine Interactions

Nicu Ahmadi (University of Texas - A&M & Stanford University, Connectivity Standards Alliance, USA); Tracy Hammond (Texas A&M University, USA)

Introduction to AI in Undergraduate Engineering Education

Santiago Isaac Flores-Alonso (Instituto Politécnico Nacional & Centro de Investigación En Cómputo, Canada); Noemi Mendoza (Texas A&M University, USA); René Luna Garcia (Instituto Politécnico Nacional, Mexico); Joseph Kappahn, Olivia Mott and David Dworaczyk (Texas A&M University, USA)

Detailed Program – Thursday, October 19th

Work-In-Progress: Python Code Critiquer, A Machine Learning Approach

Pradnya Pendse, Laura Albrant and Daniel T Masker (Michigan Technological University, USA); Laura Brown (Michigan Tech, USA); Jon Sticklen, Michelle Edith Jarvie-Eggart, PE and Leo C. Ureel II (Michigan Technological University, USA)

11:30 – 1:00

WIP-8: Computing #3 [WIP]

Room: TRADITIONS

Crystal Viewpoints: Virtual reality viewpoint design for analytical measurement of crystal structures in Materials Science and Engineering

Timothy Pham, Shuyu Wang, Sarah Razook, Alyssa Curran, Jaskirat Singh Batra and Edgar J Rojas-Muñoz (Texas A&M University, USA)

Don't Walk Away! Virtual Safety Boundaries for Collaborative Virtual Reality Learning Environments

Raquel T. Cabrera-Araya, Yanwen Chen and Edgar J Rojas-Muñoz (Texas A&M University, USA)

Towards an Intelligent Tutoring System for Virtual Reality Learning Environments

Katherine S Bezanson and Lara Soberanis (Texas A&M University, USA); Britain J Thomas (USA); Randy Brooks and Edgar J Rojas-Muñoz (Texas A&M University, USA)

Cell Tour: Learning About the Cellular Membrane Using Virtual Reality

Hope Poulter, Logan Diebold, Sean Kelly, Samuel Pakalapati, Asha Rao and Edgar J Rojas-Muñoz (Texas A&M University, USA)

Investigating the Link between Students' Written and Survey-based Reflections in an Engineering Class

Ahmed Ashraf Butt, Filiz Demirci and Muhsin Menekse (Purdue University, USA)

Utilizing Automated Scaffolding Strategies to Improve Students' Reflections Writing Process

Saira Anwar (Texas A&M University, USA); Ahmed Ashraf Butt and Muhsin Menekse (Purdue University, USA)

Analyzing the factors that influence the timing of students asking questions and taking notes in online programming courses

Xiaonan Wang (Kobe University, Japan); Yi Sun (Kobe Institute of Computing, Japan); Yancong Su (Xiamen University of Technology, China); Kazuhiro Ohtsuki and Hidenari Kiyomitsu (Kobe University, Japan)

Detailed Program – Thursday, October 19th

11:30 – 1:00

WIP-9: Diversity and Broadening Participation #2 [WIP]

Room: ROSS I

More than a checkbox: Exploring intersectional experiences of engineering students using the Social Identity Wheel

Rachel Figard (Arizona State University, USA); Yash Tadimalla (University of North Carolina at Charlotte, USA); Emma Doodoo (University of Michigan, USA)

Transnational higher education: diversity as challenge

Rosa Maria Vasconcelos and Emilia Araujo (Minho University, Portugal); Lara Campinho (University of Minho, Portugal); Marcia Silva (University of Beira Interior, Portugal)

About Us, Without Us: A Review of U.S. Disability-Related Institutional Policies and Practices

Rachel Figard, Samantha Brunhaver and Jennifer Bekki (Arizona State University, USA)

Towards iVProg4All: an accessibility test with blind

Marcos Devaner Nascimento (Universidade de São Paulo, Brazil); Anarosa A. F. Brandão (Universidade de São Paulo & Escola Politécnica, Brazil); Leônidas O Brandão (University of São Paulo, Brazil); Tiago Melo Casal (União Brasileira de Faculdades - UNIBF, Brazil)

International Collaboration to Increase Access to Educational Robotics for Students

Milan Dahal (Tufts University & Center for Engineering Education and Outreach, USA); Lydia Kresin (Tufts University, USA); Eduardo Pereira (Federal University of São João Del-Rei & UFSJ, Brazil); André Peres (IFRS - Campus Porto Alegre, Brazil); Chris Rogers (Tufts University, USA)

Exploring Faculty Members' Conceptualizations of Diversity, Equity, and Inclusion in Engineering Education

Isil Anakok (Virginia Tech, USA); Justin L Hess and Sowmya Panuganti (Purdue University, USA); Andrew Katz (Virginia Tech, USA)

Detailed Program – Thursday, October 19th

1:00 - 2:00

L-1: Thursday Lunch & Honorable Speaker

Room: A&M Hotel Century Ballroom, MSC 2400

Seekers, Bridgers, and Agents of Hidden Curriculum in Engineering

Idalis Villanueva Alarcón, Ph.D. (University of Florida, USA)



Bio: Dr. Idalis Villanueva Alarcón is an Associate Chair for Research and Graduate Studies and a tenured Associate Professor of Engineering Education at the University of Florida. In 2019, she received the White House Office of Science, Technology, and Policy's Presidential Early Career Award for Scientists and Engineers (PECASE) award for her 2017 National Science Foundation CAREER project on hidden curriculum in engineering.

Abstract: Hidden curriculum (HC) represents the unacknowledged and oftentimes “hidden” lessons or messages in a working or learning environment that hinder marginalized groups from navigating their environments successfully. HC propagates structurally through social networks and interactions, transferring a context's norms, values, and beliefs to the learner. In this talk, we will explore the traits of individuals (seekers, bridgers, and agents) as they become aware of the HC around them.

2:00 - 3:30

SPS-1: [SPECIAL] Refining Your Advising Approach: Effective Strategies for Mentoring Graduate Students

Room: MSC 2406 A

Refining Your Advising Approach: Effective Strategies for Mentoring Graduate Students

Rachel L. Kajfez (The Ohio State University, USA); Mayra S. Artiles and Holly Matusovich (Virginia Tech, USA); Amanda M Singer (The Ohio State University, USA)

2:00 – 3:30

SPS-10: [SPECIAL] Using Scalable Competency in Computing and Engineering Education

Room: HULLABALOO

Using Scalable Competency in Computing and Engineering Education

Alison Clear (EIT, New Zealand); John Impagliazzo (Hofstra University, USA); Judith Gal-Ezer (Open University, Israel); Marisa Exter (Purdue University, USA)

2:00 – 3:30

SPS-11: [SPECIAL] Uncovering the Hidden Curriculum: Finding Dispositional Expectations

Room: MSC 2404

Uncovering the Hidden Curriculum: Finding Dispositional Expectations

Stephen T Frezza (Franciscan University of Steubenville, USA); Mihaela Sabin (University of New Hampshire, USA); Marisa Exter (Purdue University, USA)

Detailed Program – Thursday, October 19th

2:00 – 3:30

SPS-12: [SPECIAL] Crazy Idea: What If We Use Engineering to Develop and Deliver Engineering Education?

Room: MSC 2405

Crazy Idea: What If We Use Engineering to Develop and Deliver Engineering Education?

Bror Saxberg (LearningForge LLC and IEEE ICICLE, USA); Emily Marasco (University of Calgary, Canada); Jim Goodell (IEEE LTSC & QIP, USA)

2:00 – 3:30

SPS-2: [SPECIAL] Honing the craft of conducting interviews in engineering education research

Room: MSC 2406 B

Honing the craft of conducting interviews in engineering education research

Sindia Rivera-Jimenez (University of Florida, USA); James Huff (Harding University, USA); Jerrod A Henderson (University of Houston, USA); Amy Brooks (Oregon State, USA)

2:00 – 3:30

SPS-3: [SPECIAL] FIE Special Session - Developing Our Growth Mindset to Support Student Success

Room: ROSS I

FIE Special Session - Developing Our Growth Mindset to Support Student Success

Sharon Mason (Rochester Institute of Technology, USA)

2:00 – 3:30

SPS-4: [SPECIAL] Disabled Student Experiences in Engineering: How to Improve Our Classroom Accessibility

Room: ROSS II

Disabled Student Experiences in Engineering: How to Improve Our Classroom Accessibility

Ariel Chasen, Emily Landgren and Maura Borrego (University of Texas at Austin, USA)

2:00 – 3:30

SPS-5: [SPECIAL] Let's talk about leaving: A special session on departure from the engineering doctorate for administrators, advisors, mentors, and graduate students

Room: CORPS I

Let's talk about leaving: A special session on departure from the engineering doctorate for administrators, advisors, mentors, and graduate students

Catherine Berdanier and Gabriella M Sallai (Pennsylvania State University, USA)

Detailed Program – Thursday, October 19th

2:00 – 3:30

SPS-6: [SPECIAL] Understanding international student's struggles using Funds of Identity theory with an intersectional lens

Room: CORPS II

Understanding international student's struggles using Funds of Identity theory with an intersectional lens

Tiantian Li, Cristian Vargas-Ordonez and Siqing Wei (Purdue University, USA)

2:00 – 3:30

SPS-7: [SPECIAL] Finding Belonging in Engineering Education: A Contemplative Approach

Room: REVEILLE I

Finding Belonging in Engineering Education: A Contemplative Approach

Yevgeniya V Zastavker (Olin College of Engineering, USA); Madhvi J Venkatesh (Vanderbilt University, USA)

2:00 – 3:30

SPS-8: [SPECIAL] Sex, Gender, and Engineering: Exploring and Addressing Sexual Harassment

Room: REVEILLE II

2:00 – 3:30

SPS-9: [SPECIAL] Moral and Civic Virtues in Engineering: Reimagining Engineering Ethics to Produce Virtuous Engineers

Room: TRADITIONS

Moral and Civic Virtues in Engineering: Reimagining Engineering Ethics to Produce Virtuous Engineers

Olga Pierrakos, Adetoun Yeaman and Kyle Luthy (Wake Forest University, USA); Mary Gentile (Giving Voice to Values, USA)

3:30 - 4:30

EXH-1: Exhibitor Showcase

Room: First Floor Hotel Lobby

4:30 - 6:00

WIP-14: Pedagogical and Instructional Approaches #21 [WIP]

Room: MSC 2406 A

Training Students to Establish and Maintain Positive Group Dynamics in Design and Design-based Classes

Katie Ansell, Holly Golecki and Rebecca M. Reck (University of Illinois Urbana-Champaign, USA); Christopher Schmitz (University of Illinois at Urbana-Champaign, USA); Joe Bradley and Jessica TerBush (University of Illinois Urbana-Champaign, USA)

Detailed Program – Thursday, October 19th

Assessing the impact of curriculum integration on the intercultural learning gains of first-year computer science students

Aparajita Jaiswal (Purdue University, West Lafayette, USA); Laura Starr and Aletha D Stahl (Purdue University, USA)

Building holism in engineering education: An experimental perspective

GS Mani (IEEE Pune Section); Neha Sharma (University of Pune, India)

Exploring Design and Implementation of a Robotic-Coding Camp in Teacher Education

Pelin Yueksel Arslan and Fares Kayali (University of Vienna, Austria)

Work in Progress Paper - Learning Software Quality Assurance using Audits

Pauline Wade (Texas A&M University, USA); Tracy Hammond (Texas A&M University, USA); Saira Anwar (Texas A&M University, USA)

Creative geotechnical engineering education module based on an educational game using Multiphysics Enriched Mixed Reality

LuoBin Cui, Weiling Cai, Ryan Hare, ChenChen Huang, Gina Tang and Cheng Zhu (Rowan University, USA)

Safeguarding Authenticity: Strategies for Combating AI-Generated Plagiarism in Academia

Peter Ilic and Nicholas Carr (University of Aizu, Japan)

4:30 – 6:00

WIP-15: Pedagogical and Instructional Approaches #22 [WIP]

Room: MSC 2406 B

The Roles of Student Staff In Engineering Makerspaces

Audrey Boklage (University of Texas at Austin, USA)

On Positionality and the Implementation of Experiential Learning for Engineers

Hortense Gerardo (University of California, San Diego, USA); Brainerd Prince (Plaksha University, India)

Work in Progress: Creating a "Mechanical Engineering Teaching Community of Practice" for faculty learning and sharing pedagogical changes and innovation

Rujun Gao, M Cynthia Hipwell, Karan Watson, Mindy Bergman and Guillermo Aguilar (Texas A&M University, USA); D. Chris Seets (Texas A&M University, USA); Arun Srinivasa (Texas A&M University, USA)

Application of Organizational Systems Theory to Identify Education and Training Needs for Industry 4.0

Kandi D Pomeroy (Texas State University, USA); Malini Natarajarathinam (Texas A&M University, USA); Shaoping Qiu (Louisiana State University-Shreveport, USA); Lei Xie (Texas State University, USA); Michael Johnson (USA)

Detailed Program – Thursday, October 19th

Exploratory Learning in Engineering Programming

Campbell R. Bego (University of Louisville & J. B. Speed School of Engineering, USA); Angela Thompson, Cenetria Crockett, Raymond Chastain, Jeff Hieb, Linda Fuselier, Ryan J Patrick and Marci DeCaro (University of Louisville, USA)

Designing active and experiential remote laboratories: Key factors from the perspective of teachers designing learning activities

Hector R. Amado-Salvatierra (Universidad Galileo, Guatemala); Miguel Morales Chan and Rocael Hernandez-Rizzardini (Galileo University, Guatemala); Milvia Rosales (Universidad Galileo, Guatemala)

4:30 – 6:00

WIP-16: Pedagogical and Instructional Approaches & Others [WIP]

Room: MSC 2405

The evaluation of the problem-based approach with Think-Pair-share method for teaching in Electronics Engineering Technology Program

Moftah Ali and Jafar Al Sharab (Northwestern State University of Louisiana, USA)

An Ontology and Management System for Learning Outcomes and Student Mastery

Sarah A Reynolds, Omar Ochoa and William C Pate (Embry-Riddle Aeronautical University, USA)

Work-in-progress: Sociotechnical modules for the Introduction to Circuits Course

Susan M. Lord (University of San Diego, USA); Cynthia J Finelli (University of Michigan, USA)

An innovative experimental teaching method of hardware-software co-design-Taking a hardware accelerator of neural network using FPGA

Ying Li (Beijing University of Aeronautics and Astronautics, China); Jingzhuo Liang, Yangdong Liu, Wei Huang, Yue Yan and Xianglong Liu (Beihang University, China)

Choose Your Own Adventure: empowering students to combine structured and open Challenge-Based Learning

Jessica Lucchetta and Tommaso Carraro (University of Trento, Italy); Milena Stoycheva (Junior Achievement Bulgaria, Bulgaria); Maurizio Marchese and Lorenzo Angeli (University of Trento, Italy)

What Drives Undergraduate Engineering Students to Engage in Project Based Learning: A Case of Curriculum Reform in a Chinese University

Yanpin Ren, Yongheng Jiang and Xiaofeng Tang (Tsinghua University, China)

Intelligent tutoring for large-scale personalized programming learning based on knowledge graph

Ying Li (Beijing University of Aeronautics and Astronautics, China); Jincheng Qiu, Runze Yang and Tongyu Zhu (Beihang University, China); Sheng Hao (BeiHang University, China); ShiJie Gui (Beihang University, China); Yu Liang (Beijing University of Technology, China)

Detailed Program – Thursday, October 19th

4:30 – 6:00

WIP-17: Professional Development #7 [WIP]

Room: MSC 2404

WIP: Beyond the Cognitive: Educator readiness for Fostering Dispositions

Deepti Tagare, Jafar Tavakoli and Marisa Exter (Purdue University, USA); Mihaela Sabin (University of New Hampshire, USA); Stephen T Frezza (Franciscan University of Steubenville, USA)

A Preliminary Investigation of the Ethics Policy Concerns of Artificial Intelligence: Insights from AI Professionals Working in Policy-Related Roles

Qin Zhu and Dayoung Kim (Virginia Tech, USA); Hoda Eldardiry (Virginia Polytechnic and State University, USA); Michelle C Ausman (Virginia Tech, USA)

Secondary Data Analysis as a Research and a Training Tool: First-Year Engineering Experiences

Keanu Richards, Grant Goodall and Yevgeniya V Zastavker (Olin College of Engineering, USA); Rachel L. Kajfez (The Ohio State University, USA)

Digital Competences of Industrial Systems and Technologies Engineering Graduates in a Central Mexico Institution

Martha P Robles Gutiérrez (Universidad Politécnica de Pachuca, Mexico); Noemi Mendoza (Texas A&M University, USA); Lourdes E Del Razo Robles (UnadMexico, Mexico); Eric Simancas Acevedo (Polytechnic University of Pachuca, Mexico)

An Experience Report on Teachers' Training for Unplugged Gamified Teaching in Brazil

Isabelle Melo do Nascimento and Luiz Oliveira da Silva Junior (Universidade Federal da Paraíba, Brazil); Wilk Oliveira (Tampere University, Finland); Pasqueline Dantas and José Rocha do Amaral Neto (Universidade Federal da Paraíba, Brazil)

Micro-Credential Digital Badges in Engineering and Computing at an MSI: The Student's Perspective (Work in Progress)

Mais Kayyali, Morgan McKie, Claudia Calle Muller, Maimuna Begum Kali, Mohamed Elzomor and Alexandra C Strong (Florida International University, USA)

4:30 – 6:00

WIP-18: Assessment #6 [WIP]

Room: CORPS I

WIP: Developing an Instrument to Measure Adaptability among Engineering Students

Samantha Brunhaver and Cecilia La Place (Arizona State University, USA)

Work in Progress: Large Language Model based Automatic Grading Study

Rujun Gao (Texas A&M University, USA); Naveen Thomas and Arun Srinivasa (Texas A&M University, USA)

Detailed Program – Thursday, October 19th

Formative-Assessment Freirean-Dialogue API for Data-Analytics Trainee-Teachers

Wassim Mahfouz and Heinz- Dietrich Wuttke (Technische Universität Ilmenau, Germany); Sara Werner (SNIPIN UG, Germany)

Formative Assessment Practices in High School Classrooms - Experiences of a High School Teacher Teaching Engineering Design Curriculum

Assad Iqbal (The Ohio State University, USA); Adam R Carberry and Medha Dalal (Arizona State University, USA)

How Do I Start?: A Tiered Approach to Homework

David Schmidt and Robert J Kerestes (University of Pittsburgh, USA)

4:30 – 6:00

WIP-19: Assessment #7 [WIP]

Room: CORPS II

Was it active learning all along?: Investigating the effectiveness of the mode of exposure to Bloom's Taxonomy-based assignments in an undergraduate Fluid Mechanics course

Phapanin Charoenphol, Haejune Kim and Arkasama Bandyopadhyay (Texas A&M University, USA)

Determination of Students' Misconceptions Using the Electric Circuit Concept Diagnostic (ECCD) Instrument

Olanrewaju Paul Olaogun, Jacob Martin Foster, Zin Lin, Adel Al Weshah, Kun Yao and Nathaniel Hunsu (University of Georgia, USA)

Enhancing Evaluation and Feedback in Computer Organization Labs with an Automated RISC-V Processor Verification Framework

Yichuan Gao, Ziang Liu, ShanShan Li and Weidong Liu (Tsinghua University, China)

Expert Feedback on Engineering Sketching Skills for Object Assembly Tasks

Hillary E. Merzdorf (Texas A&M University, USA); Donna Jaison (Texas A&M University, USA); Tracy Hammond (Texas A&M University, USA); Julie Linsey (Georgia Institute of Technology, USA); Kerrie A. Douglas (Purdue University, USA)

Using Continuous Competency-Based Assessment as a Success Support Service in Higher Education

Sébastien Combéfis (Computer Science and IT in Education ASBL & AEI Consulting, Belgium)

Detailed Program – Thursday, October 19th

4:30 – 6:00

WIP-20: Computing & Others [WIP]

Room: HULLABALOO

Coding Like a Data Miner: A Sandbox Approach To Computing-Based Data Science for High School Student Learning

Justice T Walker (The University of Texas at El Paso & ABC Learning Lab, USA); Amanda Barany (Drexel University, USA); Alex Acquah (The University of Texas at El Paso, USA); Sayed Mohsin Reza (Pennsylvania State University Harrisburg, USA); Alan Barrera and Karen A Del Rio Guzman (The University of Texas at El Paso, USA); Michael Johnson (University of North Texas, USA)

Generating and Understanding Predictive Models for Student Attrition in Public Higher Education

Tiago de Souza Fernandes and Guilherme N Ramos (University of Brasilia, Institute of Exact Sciences, Brazil)

Task-fidelity assessment for programming tasks using semantic code analysis

Leon Wehmeier (OWL University of Applied Sciences and Arts, Germany); Sebastian Eilermann (Helmut Schmidt University, Germany); Oliver Niggemann (HSU, Germany); Andreas Deuter (OWL University of Applied Sciences and Arts, Germany)

Adopting Model Eliciting Activities in an Undergraduate Software Engineering Course through Real-World Projects

Young Lee (Texas A&M University-San Antonio, USA); Jeong Yang (Texas A&M University-San Antonio, USA); Young Rae Kim (Texas A&M University San Antonio, USA)

Reveal Online Learning Clickstream Data to Provide Actionable Intelligence

Patrick Seeling (Central Michigan University, USA); Michael P McGarry (University of Texas at El Paso, USA); Matthew Johnson (Central Michigan University, USA)

Investigating Cognitive Engagement in a Collaborative Desktop Virtual Reality (VR) Statics Based on the ICAP framework

Isaac D Dunmoye, Runu P Das, Dominik May, Nathaniel Hunsu, Olanrewaju Paul Olaogun and Siddharth Savadatti (University of Georgia, USA)

Co-sharing secondary qualitative research data to understand technology adoption in engineering education courses

Michelle Edith Jarvie-Eggart, PE (Michigan Technological University, USA); Dominik May and Deborah Moyaki (University of Georgia, USA); Katrina Carlson (Michigan Technological University, USA); Landon Smith (University of Georgia, USA)

Detailed Program – Thursday, October 19th

4:30 – 6:00

WIP-21: Design #3 [WIP]

Room: TRADITIONS

Exploring Possibilities of AI-enabled Image Synthesis and Design in Education

Yanwen Chen and Xin Li (Texas A&M University, USA); Ashish Kumar (Texas A&M University, USA)

The Interplay of First-year Engineering Students' Engineering Design Reasoning and Quality of the Sources for Problem Framing

Jenny Quintana-Cifuentes (University of Louisiana Monroe, USA); Ying Ying Seah (Oakland City University, USA)

Co-Creating a Model of Empathy in Engineering Design

Elizabeth A Sanders and Justin L Hess (Purdue University, USA); Nicholas D Fila (Iowa State University, USA); Allison Godwin (Cornell University, USA); Corey Schimpf (University at Buffalo, USA & Finger Lakes Trail Conference, USA)

Design and Implementation of Extensible Online Experimental Teaching Platform Based on Message Queuing Mechanism

Ziang Liu, ShanShan Li and Ninghan Zheng (Tsinghua University, China)

Extending the Usability of WebTA with Unified ASTs and Errors

Joseph Roy Teahen, Daniel T Masker and Leo C. Ureel II (Michigan Technological University, USA)

Robotics For The Streets: Open-Source Robotics for Academics

Carlotta A Berry, Alejandro Marcenido Larregola, Katie Collins and Josiah McGee (Rose-Hulman Institute of Technology, USA)

4:30 – 6:00

WIP-22: Diversity and Broadening Participation #11 [WIP]

Room: ROSS I

Navigating Undergraduate Engineering as Women of Color

Malini M Josiam, Taylor Y. Johnson, Michelle C Ausman and Walter C. Lee (Virginia Tech, USA)

Engineering and Computing Identity Development: Exploring Differences in National Origin for Latina College Students

Sarah L Rodriguez (Virginia Tech, USA)

A Comparison of Engineering Student Persistence Prior to and During COVID-19 Interruptions

Syahrul Amin and Karen Rambo-Hernandez (Texas A&M University, USA); Blaine Pedersen (Texas A&M University, USA); Camille Burnett (PVAMU, USA); Bimal Nepal (USA); Noemi Mendoza (Texas A&M University, USA)

Detailed Program – Thursday, October 19th

4:30 – 6:00

WIP-23: Ethics and Thinking & Educational Level [WIP]

Room: ROSS II

Raising Young Pupils and Students' Awareness Levels About the Impacts of Digital Technologies on the Environment, Climate, Health and Well-Being Through a Challenge

Sébastien Combéfis (Computer Science and IT in Education ASBL & AEI Consulting, Belgium); Steve Tumson (Tumson Consulting, Belgium)

Leveraging the Power of AI in Undergraduate Computer Science Education: Opportunities and Challenges

Yunkai Liu (Gannon University, USA)

Senses of relationship and utopias: Unveiling ethical subjectivities in the engineering culture

Sandra Milena Merchan-Rubiano (Universidad de La Salle)

"Information Talent" sharing program: Discussion on an assistant form of Interdisciplinary Information Literacy Education

Jinghan Liu (Tsinghua University, China); Lifeng Han (Tsinghua University Library, China); Liwei Bao (Tsinghua University, China)

CEO as a professor: a connection perspective between theory and practice in engineering programs

Frederico Pifano de Rezende (Federal Institute of Espírito Santo, USA & Texas A&M University, USA); Chris Curran (Texas A&M University, USA); Afsaneh H. d'Escoffier (Fiocruz, Brazil); Marco Braga (CEFET/RJ, Brazil)

4:30 – 6:00

WIP-24: Ethics and Thinking #2 [WIP]

Room: REVEILLE I

The paradox of industrial involvement in engineering higher education

Srinjoy Mitra (University of Edinburgh, United Kingdom (Great Britain)); Jean-Pierre Raskin (Université Catholique de Louvain, Belgium)

Distinguishing Between Ethical and Normative Behaviors in Engineering: A Delphi Study

Athena Lin and Justin L Hess (Purdue University, USA)

Using ChatGPT for homework: Does it feel like cheating? (WIP)

Campbell R. Bego (University of Louisville & J. B. Speed School of Engineering, USA)

Implementing a Praxis of Change: A Comparative Case Study on the Instruction of Engineering Ethics and the Development of Trust

Hortense Gerardo (University of California, San Diego, USA); Raymond de Callafon and Nicholas Boechler (University of California San Diego, USA)

Detailed Program – Thursday, October 19th

Diversity, Equity, and Inclusion (DEI) Research in Engineering Education: Preliminary Results from a Scoping Literature Review

Yi Cao (1211 University City B & Virginia Tech, USA) and Homero Murzi (Virginia Tech, USA)

4:30 – 6:00

WIP-25: Mental Health & Diversity [WIP]

Room: REVEILLE II

Improving Mental Health Support in Engineering Education using Machine Learning and Eye-Tracking

Yuexin Liu (Texas A&M University, USA); Wei Lu (TEXAS A&M UNIVERSITY, USA); Amir Tofighi Zavareh (Texas A&M University, USA); Michelle Rigsby (TEXAS A&M UNIVERSITY, USA); Ben Zoghi (Texas A&M University, USA)

WIP: Faculty Perceptions of Graduate Student Mental Health: A Productivity Framing

David Feil-Seifer and Mackenzie C. Parker (University of Nevada, Reno, USA); Kiara L Steinhorst (University of Nevada, USA); Adam Kirn (University of Nevada, Reno, USA)

Using Self-Determination Theory to Examine Student Responses to Five-Minute Self-Regulation Strategies in the Engineering Classroom

Harly Ramsey and Julie Loppacher (University of Southern California, USA)

Improving Undergraduate Research Mentoring Practices: Faculty Development to Support Non-Traditional Students in Computing Research

Sarah Hug (Colorado Evaluation and Research Consulting, USA); Patricia Morreale (Kean University, USA); Heather Thiry (University of Colorado Boulder, USA)

Deficit Ideologies in Engineering Education: Unveiling Challenges and Implications

Joel Alejandro Mejia (The University of Texas at San Antonio, USA); Karina Ivette Vielma (University of Texas at San Antonio, USA)

WIP: Racialized discourses in engineering education: What can we learn from raciolinguistics to inform broadening participation in predominantly Latino/a/x engineering spaces?

Joel Alejandro Mejia and Martha Sidury Christiansen (The University of Texas at San Antonio, USA)

(Work in Progress) Mindset in the Computing Classroom and Broadening Participation: A Pilot Study

Jasmine S Batten (Florida International University, USA); Monique Ross (The Ohio State University, USA)

Detailed Program – Thursday, October 19th

4:30 – 6:00

WIP-26: Attitudes and Perceptions & Others [WIP]

Room: EAGLE

Fairness in Predictive Learning Analytics: A Case Study in Online STEM Education

Ali Al-Zawqari (Vrije Universiteit Brussel, Belgium); Gerd Vandersteen (Vrije Universiteit Brussel (VUB), Belgium)

Work in progress: ChatGPT as an Assistant in Paper Writing

Pablo Baizan, Clara Pérez, Rosario Gil and Elio Sancristobal (Spanish University for Distance Education - UNED, Spain); Felix Garcia Loro (Spanish University for Distance Education (UNED), Spain); Manuel Castro (Spanish University for Distance Education - UNED, Spain)

A systematic review of student misconceptions about electricity and electric circuit concepts

Alexander Skelton, Muhammad Zafar, Nathaniel Hunsu and Olanrewaju Paul Olaogun (University of Georgia, USA); Ismail A Idowu (Morgan State University, USA)

The Development of An Instrument to Measure Engineering Faculty's Self-Efficacy and Perceptions of Teaching Laboratory Intensive Online Courses

Garth V Crosby (Texas A&M University, USA); Maram Alaqra (Texas A&M University, USA); Bugrahan Yalvac (Texas A&M University, USA)

Work-in-Progress (Research Category): Using multimodal approaches to understand the attention and focus of students engaging in intuition-based online engineering learning games

Chelsea Obade, Kimberly Cook-Chennault and Hyeon Woo Kim (Rutgers, the State University of New Jersey, USA)

Engineering Program "Freshmen Motivation Week"

Claudio R Brito (Science and Education Research Organization, Portugal); Melany M Ciampi (Safety, Health and Environment Research Organization & President, Portugal)

Observations of Cheating Behaviours in Online Examinations and Tools for Mitigation

Manuel Castro (Spanish University for Distance Education - UNED, Spain); Sathiamoorthy Manoharan (The University of Auckland, New Zealand); Ulrich Speidel, Xinfeng Ye and Jiayi Zu (University of Auckland, New Zealand)

6:00 - 9:00

DWN-B: Social Event, Downtown Bryan

Room: Downtown Bryan

Detailed Program – Friday, October 20th

8:00 - 9:15

Plen-2: Keynote Presentation, Gary R Bertoline

Room: A&M Hotel Century Ballroom

Engineering the Inclusive Mindset for the Future: A Blueprint for Systemic Change in Undergraduate Engineering & Engineering Technology Education



Gary R Bertoline, Ph.D (Purdue University, USA)

Bio: Dr. Gary R. Bertoline is a Distinguished Professor of Engineering Technology and Computer & Information Technology at Purdue University. He earned his Ph.D. at The Ohio State University and was on the faculty in the College of Engineering for three years before coming to Purdue University in 1990.

As Dean at Purdue, he led the development of the Polytechnic Institute at Purdue, a significant effort to transform students' learning experience to better prepare graduates for life and work in the digital age by adopting student-centered, high-impact educational practices. Gary was the visionary co-leader for the Purdue Polytechnic High Schools in Indianapolis and South Bend, IN, with more schools planned.

He has authored and co-authored seven computer-aided design and engineering design graphics textbooks, with one, Fundamentals of 3D Solid Modeling and Graphics Communications, soon to be in its 8th edition.

Gary is PI for an NSF grant in collaboration with the National Academy of Engineering (NAE) and the American Society of Engineering Education (ASEE). This grant will develop a curriculum framework for an innovative, adaptive, robust, diverse, and inclusive engineering and engineering technology education model relevant to the 21st century.

Abstract: The world's challenges today demand systemic change in engineering education and a growth mindset of the engineer. The rich history of the nation's engineers' extraordinary accomplishments brings hope that today's challenges to humanity can be addressed with systemic changes in engineering education based on a growth mindset in the classroom. This approach builds on the scientific and analytical mindset established by the Grinter Report and modernizes it to include known effective student-centered success practices.

With the threefold framework of 1.) challenges facing humanity, 2.) increasing the diversity of the engineering profession, and 3.) developing a student-centric mindset in the preparation of engineers, the American Society for Engineering Education (ASEE) and the National Academy of Engineering (NAE), through the support of the National Science Foundation (NSF) have undertaken the task of reviewing the current state of engineering and engineering technology education to make recommendations that will advance the discipline of engineering education. A diverse group of people interested and dedicated to improving engineering education came together to define a Call to Action to imagine and make recommendations for a new future of engineering education. This multi-year effort will guide engineering and engineering technology faculty and leaders through specific recommendations for changing curricula, pedagogy, and mindsets. The preliminary findings of this Call to Action will be presented.

Detailed Program – Friday, October 20th

9:15 – 10:45 AM

FIE'24 Planning Session (closed meeting)

Room: Hullabaloo

9:15 - 10:45

PNL-1: [PANEL] Multi-Modal Approach - Why, What, When, and How?

Room: ROSS I & II

Multi-Modal Approach - Why, What, When, and How?

Idalis Villanueva Alarcón (University of Florida, USA); Saira Anwar (Texas A&M University, USA); Zahra Atiq (The Ohio State University, USA)

9:15 – 10:45

PNL-2: [PANEL] Zoom a WISE Woman: Becoming a STEM Expert!

Room: CORPS I & II

Zoom a WISE Woman: Becoming a STEM Expert!

Rachelle Pedersen, Iliana De La Cruz, Sarah Poor, Natalie Coleman, Haley Moyer and Marion Nachon (Texas A&M University, USA)

9:15 – 10:45

PNL-3: [PANEL] Toward Scalable Competency-Based Computing Education

Room: REVEILLE I & II

Toward Scalable Competency-Based Computing Education

Alison Clear (EIT, New Zealand); John Impagliazzo (Hofstra University, USA); Judith Gal-Ezer (Open University, Israel); Marisa Exter (Purdue University, USA)

9:15 – 10:45

PNL-4: [PANEL] Faculty Leadership

Room: MSC 2406 A & B

Panel: Faculty Leadership

Huihui H Wang (National Science Foundation, USA); Lina Karam (Arizona State University, USA); Georges Zissis (Université de Toulouse, France); Jianchu Yao (East Carolina University, USA); Jill Nelson (George Mason University, USA); Minh Jo (Korea University, Korea (South)); Rafal Sliz (University of Oulu, Finland); Michele Nogueira (Federal University of Minas Gerais, Brazil); Steve E Watkins (Missouri University of Science and Technology, USA)

10:45 - 11:15

B-2: Friday Morning Break

Room: Second Floor Foyer & MSC 2401

Detailed Program – Friday, October 20th

11:15 - 12:45

PP-12: Pedagogical and Instructional Approaches #7

Room: MSC 2406 A

Reaching Across The Communication Gap: Evaluating How Augmented Reality Shared Gestural Spaces Impact Gesture And Language Usage

Glen Hordemann (Texas A&M University & Texas A&M Embodied Interaction Lab, USA); Francis Quek and Larry Powell (Texas A&M University, USA)

Measuring Computing Students' Perceptions of Social Presence and Engagement in Synchronous Remote v. In-Person Classes

Noah Q Cowit, Christopher Lynnly Hovey and Lecia Barker (University of Colorado Boulder, USA)

Beyond Courses: Towards Supporting Goal-Oriented Learning in MOOC Platforms

Fareedah E Alsaad (King Abdul Aziz University, Saudi Arabia); Abdussalam Alawini (University of Illinois at Urbana-Champaign, USA)

Granular or Long: Influence of the Content Structure on Student Interaction with Learning Materials

Jacek Marciniak, Andrzej Wójtowicz, Barbara Kołodziejczak and Marcin Szczepański (Adam Mickiewicz University, Poland); Dorota Marciniak (SWPS University, Poland); Anna Stachowiak (Adam Mickiewicz University, Poland)

Towards the future of engineering education: Synchronous evaluation of skills between distant universities in a Global Shared Learning Classroom

Rebeca García-García and Olga Patricia Vazquez-Villegas (Tecnologico de Monterrey, Mexico); Maria Ileana Ruiz Cantisani (Tecnológico de Monterrey, Mexico); Vianney Lara-Prieto, Patricia Caratozzolo, Gisselle Morales Veloquio, Luz Patricia Montaña Salinas and Jorge Membrillo-Hernández (Tecnologico de Monterrey, Mexico)

A Systematic Review of Perceptions Regarding Educational Video Games Held by Students, Administrators, Teachers, and Parents

Yanwen Chen, Anthony D Jones, Emma Ko, Sherry M Nguyen, Lenny Tanui, Addison Zipter and Andre Thomas (Texas A&M University & LIVE Lab, USA); Michael S Rugh (Texas A&M University & LIVE Lab, USA)

11:15 – 12:45

PP-13: Pedagogical and Instructional Approaches #8

Room: MSC 2406 B

Successful Implementation of Education Technology in Schools and Colleges

Sarah Gibson and Catherine Carroll (CooperGibson Research, United Kingdom (Great Britain)); Colin Brown (Five Tribes Ltd, United Kingdom (Great Britain))

Comparison of Student Learning Outcomes Among SQL Problem-Solving Patterns

Sophia Yang, Geoffrey L Herman and Abdussalam Alawini (University of Illinois at Urbana-Champaign, USA)

Detailed Program – Friday, October 20th

AR-Classroom: Augmented Reality Technology for Learning 3D Spatial Transformations and Their Matrix Representation

Shu-Hao Yeh, Chengyuan Qian, Dezhen Song, Samantha D. Aguilar, Heather Burte and Philip Yasskin (Texas A&M University, USA); Ziad Ashour (King Fahd University of Petroleum and Minerals, Saudi Arabia); Zohreh Shaghaghian (PassiveLogic, USA); Uttamasha Monjoree (Texas A&M University, USA); Wei Yan (Texas A&M University, USA)

AR-Classroom: Usability of AR educational technology for learning rotations using three-dimensional matrix algebra

Samantha D. Aguilar, Heather Burte, Philip Yasskin, Jeffrey Liew, Shu-Hao Yeh, Chengyuan Qian and Dezhen Song (Texas A&M University, USA); Uttamasha Monjoree (Texas A&M University, USA); Wei Yan (Texas A&M University, USA)

Virtual Hiring Managers: Student Perceptions and Agent Preferences

Veon Brewster and Stephanie J. Lunn (Florida International University, USA)

Motivating the New Generation: Using Flipped Classroom and ARCS Model to Enhance Block-Based Programming Education

Choi Wan-Chong (Macao Polytechnic University, Macao); António José Mendes (University of Coimbra & CISUC, Dep. of Informatics Engineering, Portugal); Huey Lei (Caritas Institute of Higher Education, Hong Kong)

11:15 – 12:45

PP-14: Pedagogical and Instructional Approaches #9

Room: MSC 2405

Health Tycoon: An Educational Simulation Game on Positive Habits

Matheus H. D. Cirillo (University of Sao Paulo, Brazil); Gustavo M S C Ferreira (University of São Paulo, Brazil); Michel Hecker Faria (Universidade de São Paulo, Brazil); Alexandre Ponce de Oliveira (Faculdade de Tecnologia de Lins & Universidade de São Paulo, Brazil); Carla Roberta O. Carvalho (University of São Paulo, Brazil); Paulo S. Souza (University of Sao Paulo, Brazil)

Enzimage: An educational game about enzymes and metabolism

Gustavo M S C Ferreira (University of São Paulo, Brazil); Matheus H. D. Cirillo (University of Sao Paulo, Brazil); Michel Hecker Faria (Universidade de São Paulo, Brazil); Paulo S. Souza (University of Sao Paulo, Brazil); Alexandre Ponce de Oliveira (Faculdade de Tecnologia de Lins & Universidade de São Paulo, Brazil); Carla Roberta O. Carvalho (University of São Paulo, Brazil)

Promoting Entrepreneurial Mindset and Diversity in Power Engineering Class through Case Studies

Khalid Al-Olimat (Ohio Northern University, USA)

Conclusions of an Action Research Intervention for Activating Large Cohorts in Academic Courses

Matthias Haack and Jutta Mägdefrau (University of Passau, Germany)

Detailed Program – Friday, October 20th

Online Prediction to Facilitate a Flipped and Adaptive Classroom

Qiong Cheng (University of North Carolina at Charlotte, USA)

Metabuleiro: a digital board game about the human body and a healthy diet

Gustavo M S C Ferreira (University of São Paulo, Brazil); Matheus H. D. Cirillo (University of Sao Paulo, Brazil); Michel Hecker Faria (Universidade de São Paulo, Brazil); Paulo S. Souza (University of Sao Paulo, Brazil); Alexandre Ponce de Oliveira (Faculdade de Tecnologia de Lins & Universidade de São Paulo, Brazil); Carla Roberta O. Carvalho (University of São Paulo, Brazil)

11:15 – 12:45

PP-15: Diversity and Broadening Participation #4

Room: REVEILLE I & II

Noncognitive and Affective Attributes of Caregivers Enrolled in Engineering and Computing Programs

Sanga Kim (The University of Texas at El Paso, USA); Lisa C. Kaczmarczyk (Independent Consultant, USA); Jessica Rivera and Ann Gates (University of Texas at El Paso, USA)

Digging for Bedrock: Grounded Strategies for Broadening Participation in Engineering

Gregory Triplett, Jr (Saint Louis University, USA); John Leonard and Rachel Wasilewski (Virginia Commonwealth University, USA)

Widening Access to Higher Education through Degree-level Apprenticeships in Software Engineering

Matthew Barr, Oana Andrei and Maria Kallia (University of Glasgow, United Kingdom (Great Britain))

Perceived barriers and costs associated with participation in student innovation competitions

Sadan Kulturel-Konak, Ada Leung and Abdullah Konak (Penn State Berks, USA)

Mentoring Economically Disadvantaged Computing Students with a Growth Mindset: Embracing our Own Growth Mindset by Learning from First Faculty Perspectives of a Novel Endeavor

Sharon Mason (Rochester Institute of Technology, USA); Kimberly Fluet (University of Rochester, USA)

Theatre in Engineering Classes: An Interdisciplinary Approach to Address Bias in Student Engineering Teams

Paul Kritschgau (unkown, USA); Irene Alby (West Virginia University, USA); Rebecca Brown Adelman (Affinity Arts Consulting, USA); Robin Hensel, Kristin Brewster and Susie Huggins (West Virginia University, USA); Karen Rambo-Hernandez (Texas A&M University, USA)

Detailed Program – Friday, October 20th

11:15 – 12:45

PP-16: Professional Development #3

Room: MSC 2404

Managing Soft Skills Development in Technological Innovation Project Teams: An Experience Report in the Automotive Industry

Davi Mendes Maia, Simone C. dos Santos, Pedro A. A. Falcão and Guimel F. G. Cavalcante (Federal University of Pernambuco, Brazil)

Evaluating competences on first year course in three years: external effects on creative tension

Niko Myller, Jussi Kantola and Carolina Islas Sedano (University of Turku, Finland)

Integrating active methodologies in the R, D&I projects to improve student's skills: A case study

Diego Sales (Federal University of Amazonas & Institute Federal of Amazon, Brazil); Jose Pinheiro Queiroz Neto (IFAM, Brazil); Gilbert Martins (Instituto Federal de Educação, Ciência e Tecnologia Do Amazonas, Brazil); Cleber Figueira (SMART, Brazil)

Academic Support 360 Framework in Higher Education

Emer Thornbury, Frances Sheridan and Lisa Murphy (National College of Ireland, Ireland); Pramod Pathak (Technological University of Dublin, Ireland); Cristina H Muntean and Paul Stynes (National College of Ireland, Ireland)

A Matrix Taxonomy of Knowledge, Skills, And Abilities (KSA) shaping 2030 Labor Market

Patricia Caratozzolo, José Daniel Azofeifa, Luis Alberto Mejía-Manzano and Valentina Rueda-Castro (Tecnologico de Monterrey, Mexico); Julieta Noguez (Tecnologico de Monterrey & Escuela de Ingeniería y Ciencias, Mexico); Alejandra J. Magana and Bedrich Benes (Purdue University, USA)

TestMate: programming teaching support tool

Isaac Souza Elgrably, Pedro Henrique Alves Luz and João Victor Silva Kiluchi (Cesupa, Brazil)

A Quantitative Study of Youth Employees' Use of an Informal Chatting Tool at a Workforce Training Program

Foad Hamidi and William Easley (UMBC, USA); Amy Hurst (NYU, USA)

11:15 – 12:45

PP-17: Curriculum and Course Development #5

Room: CORPS I & II

Stem-KIT: An interdisciplinary approach to learning physics and computer science

Matilde Gugole (University of Trento); Francesca Fiore and Tommaso Rosi (University of Trento, Italy); Giuliano Zendri (Level Up, Italy); Alberto Montesor (University of Trento, Italy)

On multidisciplinary education practices inspired by loosely-coupled architectures

Andrei Lobov (Norwegian University of Science and Technology, Norway)

Detailed Program – Friday, October 20th

Why Re-focus on IoT in education? Evidence of the Paradigm Project

Theodora K. Kouvara and Anastasios Fanariotis (Hellenic Open University, Greece); Vassilis Fotopoulos (Hellenic Open University & Digital Systems & Media Computing Laboratory, Greece); Christoforos Karachristos and Theofanis G. Orphanoudakis (Hellenic Open University, Greece)

An approach to intelligent support in designing educational programs using X-Matrices and a special domain-specific language

Alexey Dukhanov, Artem Kuzmin Alekseyevich and Semen Kraev (ITMO University, Russia)

Multidisciplinary Hackathons: Towards Developing Practical Software Engineering Skills

Mojgan Moshirpour, Tariq Al Shoura and Linda Duffett-Leger (University of Calgary, Canada); Mohammad Moshirpour (University of California, Irvine, USA)

11:15 – 12:45

PP-18: Education Level #3

Room: ROSS I & II

Enhanced 3D visuo-haptic simulators to understand the nature of friction forces

Luis J. Neri (Tecnologico de Monterrey & Escuela de Ingeniería y Ciencias, Mexico); Víctor Robledo-Rella (Tecnologico de Monterrey, Mexico); Julieta Noguez (Tecnologico de Monterrey & Escuela de Ingeniería y Ciencias, Mexico); Rosa M.G. García-Castelán (Tecnologico de Monterrey, Mexico); Andres Gonzalez-Nucamendi (Tecnologico de Monterrey, Escuela de Diseño Ingeniería y Arquitectura, Mexico)

Research Experience for Undergraduates (REU) on Construction Decision Making

Tulio Sulbaran (The University of Texas at San Antonio, USA)

Postdoctoral Mentorship Competency Assessment for Engineering and Computer Sciences

Matthew Bahnson (Pennsylvania State University, USA); Monique Ross (The Ohio State University, USA); Catherine Berdanier (Pennsylvania State University, USA)

A Lightweight Web Tool to Support Feedback in Introductory Programming Practices in Brazilian Undergraduate Disciplines

Lucas S. Candiotta (Federal University of Paraná, Brazil); Marcos V. O. de Assis (Federal University of Parana, Brazil); Marcos A. Schreiner (Federal University of Paraná, Brazil); Maria Lydia Fioravanti (University of São Paulo, Brazil & Universidad Politécnica de Madrid, Spain); Ellen Barbosa (University of São Paulo, Brazil); Anderson S. Marcolino (Federal University of Paraná, Brazil)

11:15 – 12:45

PP-19: Computing #4

Room: HULLABALOO

Literature Adventures with MEM in LIWC

Kristin L. Schaefer, Jerrod A Henderson and Jorge Rosales (University of Houston, USA)

Detailed Program – Friday, October 20th

The Proposal of a Dashboard for Analysis and Visualization of Educational Data of Intelligent Tutoring Systems

Matheus F Menezes, José Francisco Magalhães, Netto and Arcanjo Lopes (Federal University of Amazonas, Brazil); Ronilson C Silva (Universidade Federal do Amazonas & UFAM, Brazil)

Predicting Students' Software Engineering Class Performance with Machine Learning and Pre-class GitHub Metrics

Jialin Cui and Fangtong Zhou (North Carolina State University, USA); Runqiu Zhang (University of Virginia, USA); Ruochi Li (Northeastern University, USA); Chengyuan Liu and Ed Gehringer (North Carolina State University, USA)

A Serious Game for Teaching Computer Networks: A Comparison between Remote and In-Person Scenarios

Windson Viana (Federal University of Ceara, Brazil); Ricardo Rodrigues Pereira (Universidade Federal do Ceará, Brazil)

Engaging Novice Programmers: A Literature Review of the Effect of Code Critiquers on Programming Self-efficacy

Mary E Benjamin, Michelle Edith Jarvie-Eggart, PE and Leo C. Ureel II (Michigan Technological University, USA); Laura Brown (Michigan Tech, USA); Jon Sticklen (Michigan Technological University, USA)

Gamification project to receive continuous feedback in the context of the evolution of public service for lawyers

Ricardo Cordeiro G. Sant'Ana van Erven (University of Brasília (UnB), Brazil); Demétrius de Almeida Jubé and Helen Reis Santos (University of Brasília, Brazil); Sergio A. A. Freitas (University of Brasilia, Brazil); Edna Dias Canedo, Sra (University of Brasilia & UNB, Brazil)

11:15 – 12:45

PP-20: Assessment #1

Room: LEADERSHIP LAB

Scaffolding the Blended Learning Experience by Integrating a Weekly Assessment into an Introductory Power Systems Course

Sangit Sasidhar (National University of Singapore, Singapore)

Beyond Question Shuffling: Randomization techniques in programming assessment

Henry Hickman, Paul McKeown and Tim Bell (University of Canterbury, New Zealand)

Evaluating a Pass/Fail Grading Model in First Year Undergraduate Computing

Mark Zarb, Roger McDermott, Kyle Martin, Tiffany Young and Jess McGowan (Robert Gordon University, United Kingdom (Great Britain))

Towards Automated Assessment of High School Programming

Henry Hickman and Tim Bell (University of Canterbury, New Zealand)

Detailed Program – Friday, October 20th

A Review of Spatial Assessments for Science, Technology Engineering, and Mathematics Education Research: A Sample from the Northwestern SILC Website

So Yoon Yoon, Hannah Hitchings and Mark J Dsilva (University of Cincinnati, USA)

Staying Consistent: Discipline-Specific Language Used in a Well-known AP CS A Curriculum

Jason L Weber and Jennifer Parham-Mocello (Oregon State University, USA)

11:15 – 12:45

PP-21: K12 STEM Education #4

Room: OAK

Constraints in PK-8 STEM Classrooms: A Mixed Methods Study

Natasha L Wilkerson, Daniel J. De Jesús and Kelli Adam (Texas A&M University, USA)

Spatial Visualization in Informal Learning

Sandra B Nite and Niyazi Erdogan (Texas A&M University, USA); Ali Bicer (University of Wyoming, USA); Kimberly Ann Currens (Texas A&M University, USA); Seonhu Lee (Allen Academy, USA)

Spatial Reasoning Development in the K12 Environment

Sandra B Nite, Niyazi Erdogan and Trenton Gray (Texas A&M University, USA); Seonhu Lee (Allen Academy, USA)

Computer Science (CS) Day for Middle School Students

Trevor D Veron, Teresa F Iles, Jiangjiang Liu and Aetesam Ali Khan Ashar (Lamar University, USA)

From Classroom to Cosmos: The Impact of Space Teams Academy on Engineering Education

Fernando S Arias and Elise A Koock (Texas A&M University, USA); Gregory E Chamitoff (Texas A&M University & SimDynamX LLC, USA)

11:15 – 12:45

PP-22: Ethics and Thinking #1

Room: TRADITIONS

Identifying Critical Incidents Related to Ethics Among Early-Career Engineers

Lazlo K. Stepback and Carla B. Zoltowski (Purdue University, USA); Stephanie A. Claussen (San Francisco State University, USA); Brent Jesiek (Purdue University, USA)

Leadership Identity Development of Computer Science Undergraduates for a Diverse and Global World

Mariana Alvidrez (New Mexico State University, USA); Elsa Villa (The University of Texas at El Paso, USA); Jessica Rivera (University of Texas at El Paso, USA)

On the Challenges and Opportunities of Using ChatGPT in Academia

Mohamed Morsy (Texas A&M University Texarkana, USA); Abdallah Farraj (Texas A&M University System, USA); David Reavis (Texas A&M University-Texarkana, USA)

Detailed Program – Friday, October 20th

The role of peer dialogue as disruptor in critical ethical analysis for computing students

Andrew Ciminski and Charles Wallace (Michigan Technological University, USA)

Teaching Multidimensional Ethical Decision-Making through a Role-Play Case Study

Shruti Mehta, Ashish Hingle and Aditya Johri (George Mason University, USA)

What do Biomedical Engineering Faculty Talk About When They Talk About Ethics?

Nicholas D Fila (Iowa State University, USA); Justin L Hess and Andrew O. Brightman (Purdue University, USA)

12:45 - 2:15

L-2: Friday Lunch and Awards Ceremony

Room: A&M Hotel Century Ballroom, MSC 2400

2:15 - 3:45

PP-23: Pedagogical and Instructional Approaches #19

Room: MSC 2406 A

Impacts of Course Culture on Student Creativity Development in Engineering Course Projects

Haifeng Wang (Pennsylvania State University & Pennsylvania State University New Kensington, USA); Shirley Campbell (Pennsylvania State University, USA)

Innovations in an undergraduate laboratory to increase engagement

Amir Saeidi (University of California, Davis, USA); James C Earthman (UC Irvine, USA)

Exploring the differences in student perceptions and performances using microlearning instruction and video lectures: A comparison study

Rajagopal Sankaranarayanan (The University of Texas at Austin, USA); Shamima Mithun (IUPUI, USA)

An Approach to Facilitate Students' Work on a Graduate Thesis Based on Ontologies and Faceted Classification

Alexey Dukhanov and Alexandra Klimova (ITMO University, Russia); Tamara Chistyakova (St Petersburg State Institute of Technology - Technical University, Russia)

A taxonomy to assist TAs in providing adaptive feedback to novice programmers

Hemilis Rocha, Sra (UFPE - Universidade Federal de Pernambuco & Centro de Informática, Brazil); Patricia Tedesco (CIN- UFPE & Center for Informatics - Federal University of Pernambuco, Brazil); Evandro Costa (UFAL-Universidade Federal de Alagoas, Brazil)

2:15 – 3:45

PP-24: Pedagogical and Instructional Approaches #20

Room: MSC 2406 B

Learning to Teach: A Guide to Using Learning Theories in Computer Science Education

Edison Ishikawa (University of Brasília & Asa Norte, Brazil); Hanniel Fernando Lopes Saldanha, Hugo Hiroshi Silva Tutida and Maria de Fátima Ramos Brandão (University of Brasília, Brazil); Maristela Holanda (Texas A&M, USA)

Detailed Program – Friday, October 20th

Improving Student Success and Retention in CS1 through Self-Selection into Experience-Based Groups

April R Crockett, Gerald Gannod and Moumita Kamal (Tennessee Technological University, USA)

Scrum in the Classroom: An Implementation Guide

Sarah A Reynolds, Alexis Caldwell, Tyler Procko and Omar Ochoa (Embry-Riddle Aeronautical University, USA)

Assessing the Impact of Specifications Grading on a Data Visualization course

Alark Joshi (University of San Francisco, USA)

Generating Multiple Choice Questions for Computing Courses using Large Language Models

Andrew Tran, Kenneth Angelikas, Egi Rama and Chiku Okechukwu (Temple University, USA); David H. Smith IV (University of Illinois, USA); Stephen MacNeil (Temple University, USA)

2:15 – 3:45

PP-25: Mental Health #1

Room: MSC 2405

EEG Spectral Analysis for Inattention Detection in Academic Domain

Nasrin Dehbozorgi and Sreekanth Gopi (Kennesaw State University, USA)

Supporting Students' Time Management Through Deadline Flexibility and Responsive Instructor Support

Atousa Hajshirmohammadi (Simon Fraser University, Canada)

Engineering student mental health and help seeking - Analysis of national data from the Healthy Minds Study

Matthew Whitwer, Sarah Wilson and Joseph H. Hammer (University of Kentucky, USA)

What Contributes to Engineering Undergraduates' Mental Health and Wellbeing? Engineering Faculty Perceptions through an Exploratory Study

Muhammad Asghar and Angela Minichiello (Utah State University, USA); Assad Iqbal (The Ohio State University, USA)

Engineering Doctoral Students' Interpretations of Stress and Mental Health Experiences in Graduate Education

Mackenzie C. Parker (University of Nevada, Reno, USA); Kiara L Steinhorst (University of Nevada, USA); Adam Kim and David Feil-Seifer (University of Nevada, Reno, USA)

So much time, so little reward: Structural factors that impact student experiences in a computer architecture course

Sage Maul and Kevin J Kaufman-Ortiz (Purdue University, USA); Héctor E Rodríguez-Simmonds (Boston College, USA); Natascha T Buswell (University of California, Irvine, USA)

Detailed Program – Friday, October 20th

2:15 – 3:45

PP-26: Diversity and Broadening Participation #9

Room: ROSS I

Exploring Student Engagement, Confidence, and Usefulness for Female Students in CS Class at High School Using Machine Learning

Sultanah Abdullah A Albakri (University of Glasgow, United Kingdom (Great Britain) & University of Hail, Saudi Arabia); Mireilla Bikanga Ada and Alistair Morrison (University of Glasgow, United Kingdom (Great Britain))

Expanding Pathways for Hispanic Students to Enter and Succeed in Computing Graduate Studies

Jessica Rivera and Ann Gates (University of Texas at El Paso, USA); Elsa Villa (The University of Texas at El Paso, USA); Patricia Morreale (Kean University, USA)
Lee (University at Buffalo, USA)

Integrating history and engineering to examine foundational assumptions

Lizabeth Thompson (Cal Poly, San Luis Obispo, USA)

2:15 – 3:45

PP-27: Diversity and Broadening Participation #10

Room: ROSS II

La familia y los amigos: Understanding how social and familial capital impact Latinx engineering students

A. Lili Castillo and Dina Verdin (Arizona State University, USA)

Investigating Women's Learning Experiences in Computing through the Lens of Schlossberg's Transition Theory

Jia Zhu (Florida International University, USA); Monique Ross (The Ohio State University, USA); Jasmine S Batten (Florida International University, USA)

How the Hidden Curriculum Reveals the Enculturation Experience of Underrepresented Students in Engineering

Kylee N Shiekh and Dean Nieuwma (Colorado School of Mines, USA); Qin Zhu (Virginia Tech, USA); Stephen Rea (Anti-Defamation League, USA)

Exploring the Significance of Internship Experiences for the Career Development of Racially Minoritized Undergraduate Engineering Students

Sophia Vicente, Taylor Y. Johnson, Taylor Lightner and Walter C. Lee (Virginia Tech, USA); Dina Verdin (Arizona State University, USA)

Assessing the self-efficacy level of Freshmen on Ethical Research and Practices in Engineering

Bimal Nepal and Michael Johnson (USA); Amarnath Banerjee, Ankita Varshney and Glen Miller (TEXAS A&M UNIVERSITY, USA)

Detailed Program – Friday, October 20th

Latinx Students' Motivation for Graduate Education and Engineering Academia

Noemi Mendoza (Texas A&M, USA); Samuel Merriweather, Vincent Guerrero, Daniella Olguin and Mark Solis (TEXAS A&M UNIVERSITY, USA)

2:15 – 3:45

PP-28: Curriculum and Course Development #10

Room: CORPS I

Diversified teaching methods of hardware experiment

Yuchao Gao, Ninghan Zheng, ShanShan Li and Chengbin Quan (Tsinghua University, China)

Global Applied Industrial Management Education: Experiences from a Professional Graduate Program

Bharani Nagarathnam (Texas A&M University, USA); Kourtney Gruner (Texas A&M University, USA)

Course-Based Multidisciplinary Undergraduate Research Outcomes Analysis & Assessment

Amar Khoukhi (York College CUNY, USA)

Using the Technology Acceptance Model to Understand Intention to Adopt a CS-based Curriculum

Jennifer Parham-Mocello and Ayushi Gupta (Oregon State University, USA)

Pilot Course in Data Visualization with a Multidisciplinary Approach: Technology+ Agricultural Engineering

Vetria L Byrd, Dharmendra Saraswat and Aanis Ahmad (Purdue University, USA)

Expanding Remote Student Learning - Internet of Things Applications and Exercises

David L. Hicks and Lifford McLauchlan (Texas A&M University-Kingsville, USA); Mehrube Mehrubeoglu (Texas A&M University-Corpus Christi, USA); Hemanth Bhimavarpu (Texas A&M University-Kingsville, USA)

EdGUIDE - Aligning Content, Assessment, and Pedagogy Using Interactive Technology Environment

Syeda Fizza Ali (Texas A&M, USA); Daniel Bang (USA); Umer Farooq (Texas A&M University, USA); Swetha Nittala (& Stanford University, USA); Saira Anwar (Texas A&M University, USA)

2:15 – 3:45

PP-29: Curriculum and Course Development #11

Room: CORPS II

Mapping learning objectives of project-based undergraduate software engineering courses to CC2020 competency model

Ahmad D Suleiman, Daqing Hou, Yu Liu, Jan DeWaters and Mary M Small (Clarkson University, USA); Juliana G de Souza (Virginia Commonwealth University, USA); David Shepherd (Louisiana State University, USA)

Detailed Program – Friday, October 20th

Professional IT Staff Use These Tools. Why Shouldn't We? Leveraging vSphere, vCenter, ESXi, and PowerCLI to Deploy Student "Corporate" Networks in a Foundational Cyber Security Engineering Course

Julie A. Rursch and Megan K Ryan (Iowa State University, USA)

Student interaction with a virtual learning environment: An empirical study of online engagement behaviours during and since the time of COVID-19

Pamela Johnston, Carlos Francisco Moreno-Garcia and Mark Zarb (Robert Gordon University, United Kingdom (Great Britain))

Using new AI-driven techniques to simplify serious games authoring

Ivan Perez-Colado (Universidad Complutense de Madrid, Spain); Victor Perez-Colado (Nord University, Norway); Antonio Calvo-Morata, Ruben SantaCruz-Piriz and Baltasar Fernandez-Manjon (Universidad Complutense de Madrid, Spain)

2:15 – 3:45

PP-30: Attitudes and Perceptions #6

Room: MSC 2404

An Inexpensive Alternative to Materials Lab Turnkey Expensive Systems: A Less is More Story!

Shadi Balawi (Texas A&M University, USA); Arun Srinivasa and Naveen Thomas (Texas A&M University, USA)

ERPLab: Remote Laboratory for Teaching Robotics and Programming

Ronilson C Silva (Universidade Federal do Amazonas & UFAM, Brazil); José Francisco Magalhães, Netto, Arcanjo Lopes and Matheus F Menezes (Federal University of Amazonas, Brazil)

Next-generation engineering: what are the types of real-world problems that our students want to solve?

Matilde Sánchez-Peña, Anne M McAlister and Jasmine Epps (University at Buffalo, USA)

Bridging Conventional Admissions Metrics and Undergraduate Engineering Student Non-Cognitive and Affective Factors

Trevor Franklin and Allison Godwin (Cornell University, USA); Edward Berger (Purdue University, USA)

An audience response system for monitoring classroom emotional climate in elementary school

Liljana Pushkar and Ana Sović (University of Zagreb, Faculty of Electrical Engineering and Computing, Croatia)

Analyzing aspects of gamification in the manifestation of gaming the system behavior

Hemilis Rocha, Sra (UFPE - Universidade Federal de Pernambuco & Centro de Informática, Brazil); Patricia Tedesco (CIN- UFPE & Center for Informatics - Federal University of Pernambuco, Brazil); Evandro Costa (UFAL-Universidade Federal de Alagoas, Brazil)

Detailed Program – Friday, October 20th

2:15 – 3:45

PP-31: Computing #8

Room: HULLABALOO

A Tool for Teaching and Learning of Design Space Exploration on Processor Architectures

Erick Rocha Amorim (Universidade Federal Do Mato Grosso Do Sul & Agetic, Brazil); Ricardo Santos and Liana Dessandre Duenha (Federal University of Mato Grosso do Sul, Brazil)

Study on Computer Science Undergraduate Students Dropout at University of Brasilia

Mathews Noronha Silveira Lisboa (University of Brasilia, Brazil); Juliana Betini Fachini Gomes (University of Brasília, Brazil); Maristela Holanda (Texas A&M, USA); Carla Koike (UnB, Brazil); Maria Teresa Leão Costa (Universidade de Brasilia, Brazil)

Digital Twinning and Remote Engineering for Immersive Embedded Systems Education

Rania Hussein, Matthew Guo and Pedro Amarante (University of Washington, USA); Luis Rodriguez-Gil and Pablo Orduña (LabsLand, Spain)

Challenging the Confirmation Bias: Using ChatGPT as a Virtual Peer for Peer Instruction in Computer Programming Education

Otavio Santos (Universidade Federal do Espírito Santo & Faculdades Integradas Espírito-Santenses, Brazil); Davidson Cury (UFES- Universidade Federal do Espírito Santo, Brazil)

Clusters of Solvers' Behavioral Patterns Based on Analysis of the Programming Process

Heidi Meier and Marina Lepp (University of Tartu, Estonia)

2:15 – 3:45

PP-32: Assessment #5

Room: LEADERSHIP LAB

Affective Computing in Software Engineering: a Topic-Based SER Approach on Collaborative Discussions

Nasrin Dehbozorgi and Mourya Teja Kunuku (Kennesaw State University, USA)

Learning Analytics to support education for all: learning from the past

Marcos Gabriel Gelorme Silveira (Universidade de São Paulo, Brazil); Leônidas O Brandão (University of São Paulo, Brazil); Anarosa A. F. Brandão (Universidade de São Paulo & Escola Politécnica, Brazil)

Authentic assessment design for meeting the challenges of Generative Artificial Intelligence

Masood Khan, Yu M Dong and Nasrin Afsarimanesh (Curtin University, Australia)

Assessing Student Learning Across Various Database Query Languages

Zepei Li, Sophia Yang, Kathryn Cunningham and Abdussalam Alawini (University of Illinois at Urbana-Champaign, USA)

Detailed Program – Friday, October 20th

2:15 – 3:45

PP-33: Diversity Concerns, Nontraditional Students, and Others

Room: EAGLE

Catching Imagination: Enabling children to capture imaginative tabletop play to support storytelling and writing

Ting Liu, Larry Powell and Francis Quek (Texas A&M University, USA)

On Neurodevelopmental Disorder based on Brain Computer Interface for Enhancing the Learning Process

Nuraini Jamil, Omar Samir Alawa, Saad Mohammed Manar, Saeed Alawi Alaidarous, Abdulrahman Saeed Adam and Shehab Adel Eldemerdash (United Arab Emirates University, United Arab Emirates); Abdelkader Nasreddine Belkacem (United Arabs Emirates University, United Arab Emirates)

Didactic Resources for the Visually Impaired: a systematic review of the literature

Derlain M Lemos (Universidade Federal do Rio Grande - FURG, Brazil); Regina Barwaldt (Federal University of Rio Grande (FURG), Brazil & Center of Computational Sciences (C3), Brazil)

An Analysis of Organizational Approaches for Advancing American University AI Education

Chan Lu (University of Georgia & USA, USA)

The importance of using the game to understand the problem of pollution and the complexity related to water management: an analysis based on the Discourse of the Collective Subject

F. Mota (Universidade Federal do Rio Grande, Brazil); Miriam Born (UFPEL, Brazil); Diana Francisca Adamatti (Universidade Federal de Rio Grande, Brazil); Marilton S Aguiar (Universidade Federal de Pelotas, Brazil)

The impact of the RPG on the players' lives in the Water Resources Management context: an analysis based on the Discourse of the Collective Subject

Miriam Born (UFPEL, Brazil); F. Mota (Universidade Federal do Rio Grande, Brazil); Diana Francisca Adamatti (Universidade Federal de Rio Grande, Brazil); Marilton S Aguiar (Universidade Federal de Pelotas, Brazil)

VISIR+ Project Follow-up after four years: Educational and research impact

Ana M B Pavani (Pontifícia Universidade Católica do Rio de Janeiro, Brazil); Clara Viegas (Polytechnic of Porto, Portugal); Natércia Maria Pereira Machad Lima (Polytechnic of Porto, School of Engineering (ISEP), Portugal); Gustavo R. Alves (Polytechnic of Porto, Portugal); Maria Arcelina Marques (School of Engineering - Polytechnic of Porto & Porto Biomechanics Laboratory, Portugal); Andre V Fidalgo (Polytechnic of Porto - School of Engineering (ISEP), Portugal); Frederico Lázaro Jacob (Polytechnic of Porto, Portugal); Juarez Bento Silva (Universidade Federal Santa Catarina, Brazil); Susana Marchisio (Facultad de Ciencias Exactas, Ingeniería y Agrimensura - Universidad Nacional de Rosario, Argentina); Luis Carlos Schlichting (Instituto Federal de Santa Catarina, Brazil); Fernando Sória (Universidad de Santiago del Estero, Argentina); Federico Lerro (Universidad Nacional de Rosario, Argentina); William S. Barbosa (PUC-Rio, Brazil); Reginaldo Steinbach (Instituto Federal de Santa Catarina, Portugal); Paulo Manoel Mafra (UFSC, Brazil)

Detailed Program – Friday, October 20th

2:20 – 3:30 PM

ERM Business Meeting

Room: Traditions

3:45 - 4:15

B-3: Friday Afternoon Break

Room: Second Floor Foyer & MSC 2401

4:15 - 5:45

PP-34: Pedagogical and Instructional Approaches #10

Room: MSC 2406 A

Project-Based Learning to Assess Flood Risk and Mitigation Strategies for Coastal Communities: A Case Study

Raul Zapata Lopez and Ismael Pagan Trinidad (University of Puerto Rico - Mayaguez, Puerto Rico); Carla Lopez del Puerto (University of Puerto Rico - Mayaguez, USA)

The Importance of Project-Scale Scaffolding for Retention and Experience in Computing Courses

Juliana G de Souza (Virginia Commonwealth University, USA); Mikaila Flavell and Ahmad D Suleiman (Clarkson University, USA); David Shepherd (Louisiana State University, USA); Jan DeWaters, Mary M Small, Yu Liu and Daqing Hou (Clarkson University, USA)

Implementation of an Effective Project-Based Learning Methodology in the Freshman Year of Engineering and Technology Programs

Mohammed Mujahid Ulla Faiz (University of Westminster, United Kingdom (Great Britain) & Presidency University, India); M. Rani (Sir MVIT, India); Manaswini Ramakrishnappa (Presidency University Bangalore, India); Rajiv Ranjan Singh (Presidency University, India); Sampath Sivaperumal (Presidency University, Bengaluru, India); Azzedine Zerguine (KFUPM, Saudi Arabia)

Exploring the Impact of Engineering Projects in Community Service on Engineering Students' Perspectives About Engineering as a Major

Isil Anakok (Virginia Tech, USA); Mark Huerta (Virginia Tech & 33 Buckets, USA); Andrew Katz (Virginia Tech, USA)

Promoting Professional Competencies through Interdisciplinary PBL: An Experience Report in Computing Higher Education

Simone C. dos Santos, Jéssyka Vilela and Alexandre Vasconcelos (Federal University of Pernambuco, Brazil)

Fostering collaborative learning through autograded Canvas quizzes

Susan N Ritchey (Texas A&M University, USA)

4:15 – 5:45

PP-35: Pedagogical and Instructional Approaches #11

Room: MSC 2406 B

Detailed Program – Friday, October 20th

Understanding Student Engagement during an Experiential Learning Task Using Eye Tracking: A Case Study

Aparajita Jaiswal (Purdue University, West Lafayette, USA); Jeevithashree Divya Venkatesh and Gaurav Nanda (Purdue University, USA)

Design and Implementation of Large-Scale Summer Undergraduate Research Programs: Evidence-Based Practice in Engineering Education

Gabriella M Torres, Edward Berger, David Evenhouse and Andres Torres (Purdue University, USA)

Incoming CS1 Students' Misconceptions on Arrays

Syeda Fatema Mazumder and Manuel A. Pérez-Quñones (University of North Carolina at Charlotte, USA)

Food Battle: the gamification concept in the nutritional field

Michel Hecker Faria (Universidade de São Paulo, Brazil); Paulo S. Souza (University of Sao Paulo, Brazil); Carla Roberta O. Carvalho (University of São Paulo, Brazil); Alexandre Ponce de Oliveira (Faculdade de Tecnologia de Lins & Universidade de São Paulo, Brazil); Matheus H. D. Cirillo (University of Sao Paulo, Brazil); Gustavo M S C Ferreira (University of São Paulo, Brazil)

Supporting Active Learning in STEM Higher Education through the UCD Sprint

Ioana Visescu, Marta Lárusdóttir and Anna Sigridur Islind (Reykjavik University, Iceland)

Understanding Engineering Students' Connection Making: A Sequential Explanatory Mixed Methods Study

Ying Wang (Georgia Institute of Technology, USA); Joyelle Harris (Georgia Tech, USA)

4:15 – 5:45

PP-36: Pedagogical and Instructional Approaches #12

Room: MSC 2405

On Delivering the Electrical Engineering Program at the RELLIS Campus

Abdallah Farraj (Texas A&M University System, USA); Faycal Znidi and Mohamed Morsy (Texas A&M University Texarkana, USA)

Enabling Investigation of Impacts of Inclusive Collaborative Active Learning Practices on Intersectional Groups of Students in Computing Education

Yash Tadimalla and Mary Lou Maher (University of North Carolina at Charlotte, USA); Audrey Rorrer (University of North Carolina at Charlotte & College of Computing and Informatics, USA); Marlon Mejias (University of North Carolina Charlotte, USA); Celine Latulipe (University of Manitoba, Canada); Jamie Payton, Gene Kwatny, John Fiore and Andrew Rosen (Temple University, USA)

Spaced retrieval practice improves engineering student performance in physics

Campbell R. Bego (University of Louisville & J. B. Speed School of Engineering, USA); Cenetria Crockett and Alvin Tran (University of Louisville, USA); Patricia Ralston (University of Louisville Speed School of Engineering, USA); Raymond Chastain (University of Louisville, USA); Keith B Lyle (TRANSFR, Inc, USA)

Detailed Program – Friday, October 20th

Exploring the Impact of Self-Regulation of Learning Support on Programming Performance and Code Development

Leonardo Soares (Federal University of Campina Grande, Brazil); Anabela Gomes (Polytechnic Institute of Coimbra - ISEC & University of Coimbra, Portugal); António José Mendes (University of Coimbra & CISUC, Dep. of Informatics Engineering, Portugal)

The Global Apprenticeship Program (GAP): bridging the gap between talent and opportunities

Andrés Felipe Salazar-Gómez and Aikaterini Bagiati (Massachusetts Institute of Technology, USA); Johanna Molina (Talanta, Colombia); Erdin Beshimov (Massachusetts Institute of Technology, USA); Cynthia Breazeal (MIT Media Lab, USA)

4:15 – 5:45

PP-37: Diversity and Broadening Participation #5

Room: REVEILLE I & II

If I Had More Time: A Transactional Perspective on Supporting Nontraditional Students in Engineering

Cory Brozina (Youngstown State University, USA)

Math for those with Severe Low Vision

Joshua Earl Howell and Francis Quek (Texas A&M University, USA)

Liberation by Robotics: Street Engineers as Toy Makers in Africa

Lannie Uwu-khaeb (University of Turku, Namibia); Erkki Sutinen (University of Turku, Finland); Jacob Nielsen (University of Southern Denmark, Denmark); Marcus Duveskog (Contextualize, South Africa); Anastasia Shipepe (University of Namibia, Namibia)

Exploring Servingness for Low-Income Academically Talented Students (LIATS) through Individual Development Plans (IDPs)

Carla Lopez del Puerto (University of Puerto Rico - Mayaguez, USA); Manuel Jimenez (University of Puerto Rico at Mayaguez, Puerto Rico); Nayda G. Santiago (University of Puerto Rico, Mayaguez, USA); Pedro Quintero (University of Puerto Rico-Mayaguez, USA); Sonia Bartolomei (University of Puerto Rico at Mayaguez, Puerto Rico); Luisa Guillemard, Oscar Marcelo Suarez and Nelson Cardona (University of Puerto Rico - Mayaguez, Puerto Rico); Aidsa I. Santiago-Román (University of Puerto Rico at Mayaguez, Puerto Rico)

Persistence Priorities and Financial Servingness in an Emerging HSI

Sarah Hug (Colorado Evaluation and Research Consulting, USA)

Exclusionary experiences of minoritized students in engineering, their description of locations and actors

Matilde Sánchez-Peña, Kristen R. Moore, Anne M McAlister, Syed Ali Kamal and Jasmine Epps (University at Buffalo, USA)

A Personalized Learning Approach to Support Students with Diverse Academic Backgrounds

Bowen Hui (University of British Columbia, Canada)

Detailed Program – Friday, October 20th

4:15 – 5:45

PP-38: Professional Development #4

Room: MSC 2404

Fostering an Equity-Minded Student Success Culture in STEM Through Faculty Development

Tram Dang (Purdue University & Santa Monica College, USA); Tim Nguyen (Independent Consultant, USA); Ciarán Brewster, Kristin Lui-Martinez and Silvana Carrion-Palomares (Santa Monica College, USA)

How Uncomfortable Conversations Can Lead to Better Faculty Preparation and Engineering Pedagogy Centered on Humanity

Lance L. A. White and Karan Watson (Texas A&M University, USA); Tracy Hammond (Texas A&M University, USA)

A Preliminary Time Study Among First-Year Engineering Undergraduates: Toward Understanding the Curricular and Co-curricular Divide

Andrew Olewnik, Matilde Sánchez-Peña, Kevin Burke and Jennifer Zirnheld (University at Buffalo, USA)

Yes, SHE Can! Program: Closing Gender Gap in STEM Education for a More Diverse Workforce

Sarah Huizar (The University of Texas at El Paso, USA); Diane E. Golding (University of Texas at El Paso, USA); Daniela Guel-Valenzuela and Karla Ayala (The University of Texas at El Paso, USA); Victor M. Garcia and Annalisa Perez (University of Texas at El Paso, USA)

State-of-the Art Augmented Reality in Construction Education to Teach Cost Estimate

Tulio Sulbaran and Amani Qasrawi (The University of Texas at San Antonio, USA)

Design Sprints in Research: A Novel Approach for Enhancing the Professional Development of Graduate Students

Tahira Reid and Catherine Berdanier (Pennsylvania State University, USA)

What Role Do Tangibles Play in Fostering Design Thinking Skills? An Exploratory Study

Yousef Jalali, Mary Jean Bürer, Natascia Petringa and Jessica Dehler Zufferey Dehler Zufferey (EPFL, Switzerland)

4:15 – 5:45

PP-39: Curriculum and Course Development #6

Room: CORPS I & II

Agile Teaching: Automated Student Support and Generate Feedback

Majid Bahrehvar (University of Calgary, Canada); Mohammad Moshirpour (University of California, Irvine, USA)

What is Skill? (and why does it matter?)

Roger McDermott (Robert Gordon University, United Kingdom (Great Britain)); Mats Daniels (Uppsala University, Sweden)

Detailed Program – Friday, October 20th

The role of soft skills in engineering education

Marcin Fojcik (Western Norway University of Applied Sciences, Norway); Martyna K. Fojcik (Volda University College, Norway); Adam Ziebinski (Silesian University of Technology, Poland); Bjarte Pollen and Anne-Lena Kampen (Western Norway University of Applied Sciences, Norway)

Content and skills for teaching Software Process Improvement in the Computer Science Course: a mapping of ACM/IEEE, SBC, SWEBOK, CMMI AND MR-MPS-SW assets

Adolfo Colares and Sandro Ronaldo Bezerra Oliveira (Federal University of Pará, Brazil); Julio Cezar Costa Furtado (Federal University of Amapá, Brazil)

Exploring the impact of incorporating entrepreneurial activities in higher education

Surupa Shaw (MTDE, Texas A&M University & Texas A&M University, USA); Mark Perez (TEXAS A&M UNIVERSITY, USA)

Student Autonomy in Collaborative Learning: Effects of Meeting Time and Team Consistency

Hongxuan Chen, Morgan M Fong, Geoffrey L Herman and Mariana Silva (University of Illinois at Urbana-Champaign, USA)

Tool Usage Patterns of Mechanical Engineering Students in Academic Makerspaces

Samuel Blair (Texas A&M University, USA); Claire R Kaat and Julie Linsey (Georgia Institute of Technology, USA); Astrid Layton (Texas A&M University, USA)

4:15 – 5:45

PP-40: Attitudes and Perceptions #1

Room: ROSS I & II

From making spaces to making change: The future of making in ECE

Shawn S. Jordan (Arizona State University, USA); R Cheville (Bucknell University, USA); Casey J Smith (University of Illinois at Urbana-Champaign, USA)

How Participating in Extracurricular Activities Supports Dimensions of Student Wellness

Beata Johnson and Joyce B. Main (Purdue University, USA); Andrew Katz (Virginia Tech, USA)

Generative AI in Computing Education: Perspectives of Students and Instructors

Cynthia Zastudil, Magdalena Rogalska, Christine Kapp, Jennifer Vaughn and Stephen MacNeil (Temple University, USA)

Engineering Students' Transformative Learning Experiences from A Virtual International Collaborative Experiential Program

Sukeerti Shandliya and Gibin Raju (University of Cincinnati, USA); Cedrick A. K. Kwuimy (University of Cincinnati, USA); So Yoon Yoon (University of Cincinnati, USA)

Using thematic analysis to characterize the connection between sociotechnical engineering courses and students' sense of belonging and engineering identity

Felicity Bilow and Jan DeWaters (Clarkson University, USA)

Detailed Program – Friday, October 20th

Analyzing Role Playing Game and its Roles and Concepts Based on Collective Subject Discourse

F. Mota (Universidade Federal do Rio Grande, Brazil); Miriam Born (UFPEL, Brazil); Diana Francisca Adamatti (Universidade Federal de Rio Grande, Brazil); Marilton S Aguiar (Universidade Federal de Pelotas, Brazil)

Exploring Trends in Research, Teaching, and Mentoring Self-efficacy Beliefs of Engineering and Computing Graduate Students

Jennifer Brown, Caroline Ringler, Marshal Rice and Karen A High (Clemson University, USA)

4:15 – 5:45

PP-41: Computing #5

Room: HULLABALOO

A systematic literature review of educational spatial visualization software and implementations for computing education

John W Lynch and Gibin Raju (University of Cincinnati, USA)

Experiences with a Hardware Description Language for a CS-majors' Computer Organization Course

Charles Reiss (University of Virginia, USA); Luther Tychonievich (University of Illinois Urbana-Champaign, USA)

Assessing Student Programming Process Using Automated Reasoning

Ruben Acuña and Ajay Bansal (Arizona State University, USA)

Autograder Impact on Software Design Outcomes

Ruben Acuña, Tyler Baron and Srividya K Bansal (Arizona State University, USA)

Understanding Students' Frustration and Confusion during a Programming Task: A Multimodal Approach

Rakhi Batra and Zahra Atiq (The Ohio State University, USA)

An analysis of interventions with students with Autistic Spectrum Disorder (ASD) using gamified geometric thinking

Lidiane M Pereira, Sra (University of Rio Grande, Brazil); Regina Barwaldt (Federal University of Rio Grande (FURG), Brazil & Center of Computational Sciences (C3), Brazil); Vinicius M. Oliveira (Federal University of Rio Grande, Brazil)

4:15 – 5:45

PP-42: Assessment #2

Room: LEADERSHIP LAB

A Peer Review Approach to Grading Projects in Computer Courses

Liang Buaa Zhang, Yue Zong, Tianyi Chen, Yafeng Ma, Shuo An and Lijun Zhang (Beihang University, China)

Detailed Program – Friday, October 20th

EmoSociograms: an open-source psychometric tool for the assessment of social and emotional competencies of students

Eleni Fotopoulou (Institute of Communication and Computer Systems / National Technical University of Athens, Greece); Anastasios Zafeiropoulos (Institute of Communication and Computer Systems/National Technical University of Athens, Greece); George Themelis (National Technical University of Athens, Greece); Èlia López Cassà (University of Barcelona, Spain); Isaac Muro Guiu (Institut Escola Coves d en Cimany, Spain); Christos Miamis (National Technical University of Athens, Greece); Symeon Papavassiliou (Institute of Communication and Computer Systems (ICCS) - National Technical University of Athens, Greece)

Quality control of crowd labeling for improving the quality of peer assessments

Banpreet Singh Chhabra and Ed Gehringer (North Carolina State University, USA)

Increasing Accuracy in Predicting Student Test Scores with Regression using Principal Component Analysis

Nastaran Davudi Pahnehkolae, Shawanda Littlejohn, Lauria Lewis and Michael Brown (University of Maryland Baltimore County, USA)

4:15 – 5:45

PP-43: K12 STEM Education #5

Room: OAK

iFractions 2.0: improving the feedback of a fractions Web learning game

Priscila Lima (Federal University of Goias, Brazil); Laura das Almas Silva (University of São Paulo, Brazil); Antonio Fernandes (Universidade de São Paulo, Brazil); Carlos Morimoto (University of Sao Paulo, Brazil); Leônidas O Brandão (University of São Paulo, Brazil)

Biologically Inspired Design: High School Students' Engagement in BID Integrated Learning in Engineering Classrooms

Abeera P. Rehmat, Meltem Alemdar, Micheal Helms, Dyanne Baptiste Porter, Jeffery Rosen and Marc Weissburg (Georgia Institute of Technology, USA)

Fostering Design Thinking for High School Students through an Automotive Engineering Project

Indah Widiastuti, Timur Abdia Oktavi, Towip Towip and Cucuk Budiyanto (Universitas Sebelas Maret, Indonesia)

Physical computational models for horizontal learning in STEM

Ting Liu and Francis Quek (Texas A&M University, USA); Glen Hordemann (Texas A&M University & Texas A&M Embodied Interaction Lab, USA)

Introduction to Machine Learning with TinyML in K-12 Education: A Case Study

Algeir P Sampaio (Federal University of Bahia, Brazil); Paulo Farias (UFBA, Brazil); Roberto A Bittencourt (University of Victoria, Canada)

Detailed Program – Friday, October 20th

Investigating the Connection between Teachers' Factors and Students' Performance in Mathematics: A UAE Case Study

Maisam Wahbah (University of Dubai, United Arab Emirates); Tamador Elboshra (UAE Ministry of Education, United Arab Emirates); Yasmin Halawani (University of Dubai, United Arab Emirates)

4:15 – 5:45

PP-44: Design #1

Room: TRADITIONS

Meta-Analysis of Hackathon Literature

Cecilia La Place and Shawn Jordan (Arizona State University, USA)

Ethical Safeguards & Behavioral Psychology Competencies: A Framework for Computer Science Capstone Project Design

Pierre Atieh (Texas A&M University Kingsville, USA); Eman Hammad (University of Toronto, Canada & Texas A&M University, USA); Celeste A Riley (Texas A&M University Kingsville, USA)

Exploration of innovative spaces that enable communication and collaboration in diverse settings

Trey Talko, Hadi Ali and Jonathan Adams (Embry-Riddle Aeronautical University, USA)

Pedagogy and Case Study for Sustainable Structural Product Eco-Design

David Kazmer (University of Massachusetts, Lowell, USA); Amir Ameli, Davide Masato, Akshay Kokil, Shanna R Thompson and Jill H. Lohmeier (University of Massachusetts Lowell, USA)

4:15 – 5:45

PP-45: Education Level #4

Room: EAGLE

Transformative Pedagogy as a Reflective Approach for Promoting Intercultural Self-Awareness In the Context of Teamwork

Irene Hensista, Shreya Guddeti, Devang Atul Patel, Sakhi Aggrawal, Gaurav Nanda and Alejandra J. Magana (Purdue University, USA)

A Blueprint for Adopting Agility in Teaching, Research and Service in an Engineering Department

Omar Ochoa, Massood Towhidnejad, James Pembridge and Radu F. Babiceanu (Embry-Riddle Aeronautical University, USA)

AI-Cybersecurity Education Through Designing AI-based Cyberharassment Detection Lab

Ebuka Okpala (Clemson University, USA); Nishant Vishwamitra (The University of Texas at San Antonio, USA); Keyan Guo (University at Buffalo, USA); Liao Song and Long Cheng (Clemson University, USA); Hongxin Hu (University at Buffalo, USA); Yongkai Wu (Clemson University, USA); Xiaohong Yuan (North Carolina A & T State University, USA); Jeannette Wade (UNC Greensboro, USA); Sajad Khorsandroo (North Carolina A&T State University, USA)

Detailed Program – Friday, October 20th

Automatic Formative and Motivational Feedback Personalized for Introductory Programming Course

Maristela Holanda (Texas A&M University, USA); Lucas Miranda (University of Brasilia, Brazil); Dilma Da Silva and Christiana Chamon (Texas A&M University, USA); Camilo Dorea and Fernanda Macedo (University of Brasilia, Brazil)

6:00 - 9:00

SE-AP: Social Event, AggiePark

Room: AggiePark

Detailed Program – Saturday, October 21st

8:00 - 9:30

PP-46: Pedagogical and Instructional Approaches #13

Room: MSC 2406 A

A Quantum Abacus for Teaching Quantum Algorithms

Dan-Adrian German (Indiana University Bloomington, USA); Marcelo Pias (FURG, Brazil); Qiao Xiang (Xiamen University, China); Sreesha Kuruvadi (Indiana University Bloomington, USA)

An Innovative Way to Teach Computer Programming for Middle and High Schools Students in the Summer Camps

Stefan Andrei and Sujing Wang (Lamar University, USA)

An Elaboration of Research-Led Computer Science Framework for Early Education in the Kingdom of Saudi Arabia

Noha Abdulkhalig M Alharbi (University of Glasgow); Quintin Cutts (University of Glasgow, United Kingdom (Great Britain))

Transforming Student Learning through Industry - Driven Software Development Projects

Alex Q. Chen, Indriyati Atmosukarto and Serena Hui Lin Goh (Singapore Institute of Technology, Singapore)

Psychology Techniques in Education Improve Student Academic Outcomes and Mental Health

Daniella J Pautz and Claire Honeycutt (Arizona State University, USA)

Validation of Felder-Solomon's Index of Learning Styles questionnaire and learning style preferences

Geraldo Nhadumbuque (Portugal-Coimbra, USA); Maria José Marcelino (University of Coimbra, Portugal); Anabela Gomes (Polytechnic Institute of Coimbra - ISEC & University of Coimbra, Portugal)

Impact of Instructional Activities on Students' Positivity, Participation, and Perceived Value in a Systems Analysis and Design Course

Syeda Fizza Ali (Texas A&M University, USA); Daniel Bang (Texas A&M University, USA); Alejandra J. Magana (Purdue University, USA); Saira Anwar (Texas A&M University, USA)

8:00 – 9:30

PP-47: Pedagogical and Instructional Approaches #14

Room: MSC 2406 B

In Search of a Philosophy of Computing Education

Roger McDermott (Robert Gordon University, United Kingdom (Great Britain)); Mats Daniels (Uppsala University, Sweden); Stephen T Frezza (Franciscan University of Steubenville, USA)

Detailed Program – Saturday, October 21st

Enhancing Meta-understanding of Entity and Relationship Diagrams in Database Modeling using Concept Maps: An Experimental Study

Wagner de Andrade Perin (Universidade Federal do Espírito Santo, Brazil); Davidson Cury (UFES- Universidade Federal do Espírito Santo, Brazil); Camila Zacché de Aguiar (Federal University of Espírito Santo - UFES, Brazil); Crediné Silva de Menezes (Universidade Federal do Rio Grande do Sul, Brazil)

20 Years of EPICS at Butler University: Experiences And Lessons Learned

Lucas W Johnson and Panagiotis (Panos) Linos (Butler University, USA)

Uncovering Patterns of SQL Errors in Student Assignments: A Comparative Analysis of Different Assignment Types

Sophia Yang, Zepei Li, Geoffrey L Herman, Kathryn Cunningham and Abdussalam Alawini (University of Illinois at Urbana-Champaign, USA)

Synchronous and Asynchronous Formative E-Assessments for Scalable Mentoring in Engineering Education

Ummay Ubaida Shegupta and René Schmidt (Chemnitz University of Technology, Germany); Wolfram Hardt (TU Chemnitz, Germany)

Addressing the Barriers of Knowledge Transfer: Using ePortfolios to Enhance Student Reflection in Technical Courses

Rebecca L Thomas, Sarah Appelhans, Richard J. Kozick and Christa Matlack (Bucknell University, USA); Philip Asare (University of Toronto, Canada); Michael S. Thompson, Stewart Thomas, Robert Nickel and R. Alan Cheville (Bucknell University, USA)

8:00 – 9:30

PP-48: Pedagogical and Instructional Approaches #15

Room: MSC 2405

Inclusion of Digital Entrance and Exit Tickets into an Undergraduate Cybersecurity Engineering Experiential Lab to Enhance Student Learning and Increase Self-assessment

Julie A. Rursch and Megan K Ryan (Iowa State University, USA); Andy Luse (Oklahoma State University, USA)

An Exploratory Study to Assess the Usability of a Groupware with Multi-Agent Systems

Joethe Moraes de Carvalho and José Francisco Magalhães, Netto (Federal University of Amazonas, Brazil)

Analysis of a course to electrical engineering from a conceptual approach by Hannah Arendt: perspectives and educational meaning. Case of a course on energy, environment and sustainability

Jose Baesso Grimoni, Sr and Edgar Mendoza Parada (Universidade de Sao Paulo, Brazil)

Detailed Program – Saturday, October 21st

With emerging tools such as ChatGPT, do we have to rewrite our learning objectives - CASE study in Cybersecurity

Peter A Jamieson (Miami University, USA); Suman Bhunia (Miami University, Ohio, USA); Dhananjai M. Rao (Miami University, USA)

Manipulatives for Teaching Computer Science Concepts

Jennifer Parham-Mocello, Garrett Berliner and Ayushi Gupta (Oregon State University, USA)

Innovating AI Leadership Education

Xiaoxue Du, Sharifa Alghowinem, Matthew Taylor, Kate Darling and Cynthia Breazeal (MIT Media Lab, USA)

8:00 – 9:30

PP-49: Diversity and Broadening Participation #6

Room: REVEILLE I & II

Infrastructural elements to foster educational equity in engineering

Katrina Robertson, Hadi Ali and Jonathan Adams (Embry-Riddle Aeronautical University, USA)

Gender Differences in the Group Dynamics of Smaller CS1 Project Groups

Bjørn H Westh, Nanna Inie, Louise Barkhuus and Claus Brabrand (IT University of Copenhagen, Denmark)

Student Feedback on Opt-in, Inclusive, Course-Integrated Study Groups

Bridget Agyare, Manooshree Patel, Alicia Matsumoto and Gireeja Ranade (University of California, Berkeley, USA)

8:00 – 9:30

PP-50: Professional Development #5

Room: MSC 2404

Computing students' perceptions towards ePortfolios

Hege Annette Olstad, Xiaomeng Su and Birgit Rognebakke Krogstie (Norwegian University of Science and Technology, Norway)

What Makes Project Teams Succeed? Students' Post-Covid Perceptions on IT Project Management Education Fostering Professional Skills

Dominik Dolezal (University of Vienna, Austria); Renate Motschnig (University of Vienna & Faculty of Computer Science, Austria)

Evaluating students' learning expectations and perceptions in a university course on Digital Transformation in the framework of learning objective taxonomies

Pelin Yueksel Arslan, Georg Noehrer and Fares Kayali (University of Vienna, Austria)

Detailed Program – Saturday, October 21st

UnplugGamify: a process to design unplugged gamification in education

Isabelle Melo do Nascimento (Universidade Federal da Paraíba, Brazil); Wilk Oliveira (Tampere University, Finland); Pasqueline Dantas, Luiz Oliveira da Silva Junior and José Rocha do Amaral Neto (Universidade Federal da Paraíba, Brazil)

Lessons Learned During the Construct of a Brain Activity Measuring Activity to Improve Construction Workforce Development

Tulio Sulbaran (The University of Texas at San Antonio, USA); Krishna Kisi (Texas State University, USA)

Strategies for Smartly Infusing Design, Innovations, and Analysis for Enhancing Research and Student Projects: A Case Study

Divya Nalla (Nalla Malla Reddy Engineering College, India); Deepak L. Waikar (Freelance, Singapore)

8:00 – 9:30

PP-51: Curriculum and Course Development #7

Room: CORPS I & II

A diagnosis on the teaching of Software Design in a sample of undergraduate courses in Computer Science in Brazil

Vitor de Souza Castro and Sandro Ronaldo Bezerra Oliveira (Federal University of Pará, Brazil)

Developing Higher Education - Post-Pandemic - Influenced by AI

Olaf Hallan Graven and Lachlan MacKinnon (University of South-Eastern Norway, Norway)

Incorporation of Sustainability into Engineering Curriculum

Kenneth R. Leitch (West Texas A&M University, USA); Emad Manla (West Texas A&M University, USA); Roy Issa (West Texas A&M University, USA)

A review of synergies between Industry 4.0, Construction 4.0, and Education 4.0 in the engineering education context

Alex Sander Clemente Souza (Purdue University & UFSCar, USA); Luciana Debs (Purdue University, USA)

Inserting Extension in the Engineering Undergraduate Courses Curriculum

Eder Mateus Gonçalves (Universidade Federal do Rio Grande - FURG, Brazil); Adriano Werhli (Federal University of Rio Grande, Brazil); Sam Devincenzi (FURG, Brazil); Vinicius M. Oliveira (Federal University of Rio Grande, Brazil); André Prisco (Universidade Federal do Rio Grande - FURG, Brazil); Cleo Zanella Billa, Ewerson Carvalho and Rafael dos Santos (Federal University of Rio Grande, Brazil)

Detailed Program – Saturday, October 21st

8:00 – 9:30

PP-52: Attitudes and Perceptions #2

Room: ROSS I & II

Novel E-Learning Experience and Perceptions with Impacts from Educational Key Opinion Leaders

Susan Zhang, Jun Shen and Jun Yan (University of Wollongong, Australia)

Exploring a Digital Maturity Metric for Schools

Sarah Gibson (CooperGibson Research, United Kingdom (Great Britain)); Colin Brown (Five Tribes Ltd, United Kingdom (Great Britain))

A systematic mapping of affective intelligent tutor systems in engineering education

Thiago Santos Figueira (University of the People, Brazil); José Francisco Magalhães, Netto (Federal University of Amazonas, Brazil)

Investigating online searching behavior based on Google Trends in MENA Region before and after COVID-19

Abdelkader Nasreddine Belkacem (United Arabs Emirates University, United Arab Emirates); Nuraini Jamil and Saed Alrabae (United Arab Emirates University, United Arab Emirates)

8:00 – 9:30

PP-53: Computing #6

Room: HULLABALOO

Drawing a computer scientist: Assessing the images of the computer scientist among K-8 teachers

Minsun Shin and Sumi Hagiwara (Montclair State University, USA); Katherine Herbert (1 Normal Ave & Montclair State University, USA); Vaibhav Anu, Rebecca Goldstein and Kazi Zakia Sultana (Montclair State University, USA)

The Effects of an Accessible Computing Curriculum for Students with Autism Spectrum Disorders

Abdurrahman Arslanyilmaz, Margie Briley and Gregory Boerio (Youngstown State University, USA); Katie Petridis (Potential Development, USA); Ramlah Ilyas (Youngstown State University, USA)

An Exploratory Study on the Impact of AI tools on the Student Experience in Programming Courses: an Intersectional Analysis Approach

Mary Lou Maher, Yash Tadimalla and Dhruv Dhamani (University of North Carolina at Charlotte, USA)

DLUnit: A Unit Testing Framework for Simulated Digital Logic Circuits

Zachary Kurmas (Grand Valley State University, USA)

Learning game programming through narrative, sound effects, and music in text-based games: A creative approach to digital game education

Glaucio Moro, Claudio Carvilhe and Bruno Campagnolo de Paula (Pontifícia Universidade Católica do Paraná, Brazil); Carlos Silla (Pontifícia Universidade Católica do Paraná, Brazil)

Detailed Program – Saturday, October 21st

Aligning Academic Efforts with Key Industries: A Case of Computing at the University of Namibia

Maria N Ntinda (University of Turku & University of Namibia, Finland); Carolina Islas Sedano, Mikko Apiola and Erkki Sutinen (University of Turku, Finland)

8:00 – 9:30

PP-54: Assessment #3

Room: LEADERSHIP LAB

Analysis of Learning Outcomes in Software Engineering: an Automated Reflection Analysis Tool

Nasrin Dehbozorgi and Koushik Goud Dindu (Kennesaw State University, USA)

A study on how to classify exercises in introductory programming courses: a Moodle plugin contribution

Thiago Gomes Verissimo, Sr. (Universidade de São Paulo, Brazil); Leônidas O Brandão and Ewout ter Haar (University of São Paulo, Brazil)

Optimizing Indonesian Education through National Standards: Implications for Engineering and Computer Science

Paul Arjanto and Ibrahim Bafadal (Universitas Negeri Malang, Indonesia); AAtmoko (State University of Malang & Educational Faculty, Indonesia); Asep Sunandar and Feibry Feronika Wiwenly Senduk (Universitas Negeri Malang, Indonesia)

A Replication Study: Validation of the 19-item Short Form for the MUSIC Inventory for Engineering Student Engagement

Susan L. Amato-Henderson and Jon Sticklen (Michigan Technological University, USA)

8:00 – 9:30

PP-55: AI, Gamification, Project Based Learning, and Others

Room: OAK

Analysis of Categorical and Numerical Variables for Dropout Intervention in Educational Settings

Andres Gonzalez-Nucamendi (Tecnologico de Monterrey, Escuela de Diseño Ingeniería y Arquitectura, Mexico); Julieta Noguez and Luis J. Neri (Tecnologico de Monterrey & Escuela de Ingeniería y Ciencias, Mexico); Víctor Robledo-Rella and Rosa M.G. García-Castelán (Tecnologico de Monterrey, Mexico)

Exploring NLP-based Methods for Generating Engineering Ethics Assessment Qualitative Codebooks

Ashish Hingle (George Mason University, USA); Andrew Katz (Virginia Tech, USA); Aditya Johri (George Mason University, USA)

Enhancing Teamwork through Games: A Systematic Literature Review

Sakhi Aggrawal and Henrietta Boowuo (Purdue University, USA)

Detailed Program – Saturday, October 21st

Design and Development of a Remote Laboratory for the Study of Physical Concepts

Márcia de Souza Xavier and Joethe Moraes de Carvalho (Federal University of Amazonas, Brazil)

Adaptive learning in programming education: a systematic mapping of the literature

Angela Vitória Mota Vieira and José Francisco Magalhães, Netto (Federal University of Amazonas, Brazil)

8:00 – 9:30

PP-56: Assessment #4

Room: TRADITIONS

Reassessing assessment in pre-engineering statistics courses

Christopher Golubski (University of Texas at Austin, USA)

Attempts and Challenges in Establishing an Undergraduate AI Major

Chan Lu (University of Georgia & USA, USA); Awn Ja Lu (University of Georgia, USA)

New Perspectives on Education and Examination in the age of Artificial Intelligence

Lars Oestreicher (Uppsala University, Sweden)

Analysing Students' Motivation for acquiring Digital Competences

Alexandra Posekany (Danube University Krems, Austria); Georg Noehrer (University of Vienna, Austria); David Haselberger (University of Vienna & Faculty of Computer Science, Austria); Fares Kayali (University of Vienna, Austria)

8:00 – 9:30

PP-57: Design #2

Room: EAGLE

Project-Based Learning to Address Infrastructure Challenges: Designing Modular Classrooms for Natural Disasters

Carla Lopez del Puerto (University of Puerto Rico - Mayaguez, USA); Humberto Cavallin (University of Puerto Rico - Rio Piedras, Puerto Rico); Luisa Guillemard (University of Puerto Rico - Mayaguez, Puerto Rico); Fabio Andrade (University of Puerto Rico, Puerto Rico); Luis Lamboy (University of Puerto Rico - Mayaguez, Puerto Rico)

Engaged Student Learning through IoT-based Projects in Senior Capstone Design Courses: Particular Look at Student Engagement in Historically Underrepresented Groups

Mehrube Mehrubeoglu (Texas A&M University-Corpus Christi, USA); Lifford McLauchlan and David L. Hicks (Texas A&M University-Kingsville, USA); Adetoun Yeaman (Wake Forest University, USA)

Methodological commitments in grounded theory, experiences of a novice researcher

Elliott Clement (Oregon State University, USA); James Huff (Harding University, USA); Shane Brown (Oregon State University, USA)

Detailed Program – Saturday, October 21st

A Low-Cost Robotic Arm Manipulator Model for Enhancing Student Learning in an Industrial Robots Course

Mohammad Mashagbeh (The University of Jordan, Jordan); Mustafa Awwad Al-khawaldeh (Philadelphia University Jordan, Jordan); Sanad Hussein (University of Jordan, Jordan); Husam AlAbdellat and Andraws Swidan (The University of Jordan, Jordan)

9:30 - 10:00

B-4: Saturday Morning Break

Room: Second Floor Foyer & MSC 2401

10:00 - 11:30

WIP-27: Pedagogical and Instructional Approaches #16 [WIP]

Room: MSC 2406 A

The potential role of AI-based Chatbots in Engineering Education. Experiences from a teaching perspective

Miguel Morales Chan (Galileo University, Guatemala); Hector R. Amado-Salvatierra (Universidad Galileo, Guatemala); Rocael Hernandez-Rizzardini (Galileo University, Guatemala); Mónica De La Roca (Universidad Galileo, Guatemala)

Embedding a Problem Graph into Serious Games for Efficient Traversal Through Game Space

Vidya Bommanapally (University of Nebraska Omaha, USA); Mahadevan Subramaniam and Abhishek Parakh (University of Nebraska at Omaha, USA)

Using Assignment Choice in Engineering Service Courses

Robert Lightfoot (Texas A&M University, USA); Tracy Hammond (Texas A&M University, USA)

A Hands-on Education Framework for Cybersecurity

Chang Phuong (University of Tennessee, Chattanooga, USA); Noman Saied (University of Tennessee, Chattanooga, USA & Chattanooga State Community College, USA); Li Yang (University of Tennessee at Chattanooga, USA)

Implementation of Formatively Assessed Student-Centered Instruction and Learning (FAISCAL) Strategy in Logic Circuits Course

Justin Foreman, Keithan Ross and Ifeakandu Moses Nzekwe (Prairie View A&M University, USA)

Are learning styles met through HyFlex modalities?

Zory Marantz (NYC College of Technology, USA)

10:00 – 11:30

WIP-28: Pedagogical and Instructional Approaches #17 [WIP]

Room: MSC 2406 B

Data Visualization Capacity (DVC) Building Tool for Teaching and Learning Data Visualization

Isha A Mahadalkar and Vetria L Byrd (Purdue University, USA)

Detailed Program – Saturday, October 21st

On the possibility of emotion recognition while question-answering utterances by voice analysis for junior high school students

Satori Hachisuka, Kayoko Kurita and Shin'ichi Warisawa (The University of Tokyo, Japan)

Moving from an ERASMUS+ Innovation Project on Mathematics in Engineering Education to the Teaching Practice: Learnings from the UPC Experience

Carles Serrat (Universitat Politècnica de Catalunya-BarcelonaTECH, Spain); M. Rosa Estela (Universitat Politècnica de Catalunya-BarcelonaTECH); M. Montserrat Bruguera and Chara Pantazi (Universitat Politècnica de Catalunya-BarcelonaTECH, Spain)

Developing a scale to measure student social and cognitive engagement in online science, technology, engineering, and math courses

Navid Yaghoubisharif, Shane Brown and Allyson Barlow (Oregon State University, USA)

GeoExplorer and Gender Identity: The Impact of Gender in a Game-Based Learning Environment

Simrun Mutha, Alexa Deeter, Jen L Sundstrom and Yevgeniya V Zastavker (Olin College of Engineering, USA); Casper Harteveld (Northeastern University, USA); Victoria Bennett (Rensselaer Polytechnic Institute, USA); Tarek Abdoun (NYU Abu Dhabi, United Arab Emirates)

Personalized Learning in Automation Education: A 3D AI-Based Approach

Asmar Ali, Andreas Deuter and Leon Wehmeier (OWL University of Applied Sciences and Arts, Germany)

10:00 – 11:30

WIP-29: Pedagogical and Instructional Approaches #18 [WIP]

Room: MSC 2405

Supervision-driven design: A lab setup for teaching and training on industrial control network

Dag Samuelsen and Olaf Hallan Graven (University of South-Eastern Norway, Norway)

Improving Delivery of UML Class Diagrams Concepts in Computer Science Education Through Collaborative Learning

Rupinder Kaur (North Dakota State University, USA); Malik Muhammad (NDSU, USA); Maninder Singh (St. Cloud State University, USA)

Student Engagement with Pre-recorded Lecture Videos in a Flipped-class Format

David M. Pabst, Vincent J. Taverna, Samantha E. Wismer, Lee A Dosse and Matthew Barry (University of Pittsburgh, USA)

Methodology and Development of Open-Source Lecture Nuggets that create Hands-on Engineering and Discussion Spaces

Jennifer Hasler (Georgia Institute of Technology, USA)

Breaking Bones and Building Knowledge: A Context-Based Lab for Exploring Beam Bending

Anne-Marie Ginn-Hedman (Texas A&M University, USA)

Detailed Program – Saturday, October 21st

Work-in-Progress: The Entrepreneurial Mindset in Industry Sponsored Capstone Projects: Balancing Project Needs and Learning Objectives

Krista M. Kecskemety, Laine E Rumreich and Bob Rhoads (The Ohio State University, USA)

10:00 – 11:30

WIP-30: Professional Development #6 [WIP]

Room: MSC 2404

Industry's Expectations of Graduate Dispositions

Natalie Kiesler (DIPF Leibniz Institute for Research and Information in Education, Germany); John Impagliazzo (Hofstra University, USA)

Mind Maps: an alternative to improve quality and communication during the requirements engineering process

Luiz Carlos Begosso (Fundacao Educacional Do Municipio de Assis & Faculdade de Tecnologia de Assis, Brazil); Luiz Ricardo Begosso (Fundacao Educacional Do Municipio de Assis, Brazil); Fernanda Salvalaggio (Colchoes Castor, Brazil); Regiane Lealdine (Unimed Brazil, Brazil); Kamila Aparecida Vicente (Faculdade De Tecnologia De Ourinhos, Brazil); Carlos Alberto Furlan (Faculdade de Tecnologia de Ourinhos, Brazil)

Mentoring Undergraduate Researchers through Entrepreneurial Mindset

Anastasia Rynearson and Christina A. Pantoja (Campbell University, USA)

Best Practices for Cultivating Innovative Thinking Skills in Innovation Competitions and Programs

Abdullah Konak and Sadan Kulturel-Konak (Penn State Berks, USA); David R. Schneider (Cornell University, USA); Khanjan Mehta (Lehigh University, USA)

Reflections on Ethics Education and Professional Preparation among New-to-the-Workforce Engineers

Dean Nieuwma, Kylee N Shiekh, Lucy Gilbert-Fagen and Julianne Stevens (Colorado School of Mines, USA)

10:00 – 11:30

WIP-31: Curriculum and Course Development #8 [WIP]

Room: CORPS I

Introducing Quantum Computing in a Sophomore Signals and Systems Course

Chao Wang and Aradhita Sharma (Arizona State University, USA); Glen Uehara, Leslie Miller and Deep Pujara (Arizona State University & SenSIP Center, USA); Wendy Barnard and Jean Larson (Arizona State University, USA); Andreas Spanias (ASU / SenSIP Center / School of ECEE, USA)

Cybersecurity in ECE curriculum, an expanded collaboration program to disseminate real security experiences in cyber-physical systems

Virgilio Gonzalez (University of Texas at El Paso, USA); Oscar A Perez (US ARMY-DEVCOM, USA); Rodrigo Romero (University of Texas at El Paso, USA)

Detailed Program – Saturday, October 21st

Designing an Educational Cyber-Physical System Based on a Model-Based Approach

Yong-Kyu Jung (Gannon University, USA); Julie Ropelewski (Instructional Designer, USA); Sherri L. Gould (Outcomes Assessment Project Coordinator, USA)

Development of a Virtual Reality Application for Oculomotor Examination Education

Austin Finlayson, Rui Wu, Chia-Cheng Lin and Brian Sylcott (East Carolina University, USA)

Core curriculum development in Intelligent Connectivity: Integration of subjects 5G and IoT with AI

Dragorad Milovanovic (University of Belgrade, Serbia); Vladan Pantovic (University Union - Nikola Tesla, Serbia)

From breadboard to complex electronic systems - introducing a heterogenous group of undergrad students to design and analysis of electronic circuits

David Riehl, Ferdinand Keil and Klaus Hofmann (Technische Universität Darmstadt, Germany)

10:00 – 11:30

WIP-32: Curriculum and Course Development #9 [WIP]

Room: CORPS II

Developing Experiential Learning Opportunities for Undergraduate Cyber Security Engineering Students Based in IoT Security: A Work in Progress Report

Megan K Ryan and Julie A. Rursch (Iowa State University, USA)

Work in Progress (Research Category): Exploring Strategies for Infusing DEI Principles Into Undergraduate Engineering Classrooms for Engineering School and Institutional Change

Kimberly Cook-Chennault (Rutgers, the State University of New Jersey, USA)

Exploring the Multi-Strata Knowledge Structures in STEM Education

Gang Liu (University of Pittsburgh at Bradford, USA)

A recommender system for machine learning pipelines' design to recognize objects in video frames as a learning tool for training data scientists

Alexey Dukhanov and Artem Alekseevich Smetanin (ITMO University, Russia); Anna Lutsenko (University ITMO, Russia)

WIP: Development of a Student-Centered Personalized Learning Framework to Advance Undergraduate Robotics Education

Ponkoj C Shill (University of Nevada, Reno, USA); Rui Wu (East Carolina University, USA); Hossein Jamali (University of Nevada Reno, USA); Bryan Hutchins (University of North Carolina Greensboro, USA); Sergiu Dascalu (University of Nevada Reno, USA); Frederick C. Harris and David Feil-Seifer (University of Nevada, Reno, USA)

Detailed Program – Saturday, October 21st

Work in Progress: Mind and skill sets for Innovation: Preparation for a Rapidly Changing World

M Cynthia Hipwell and Hadear I Hassan (Texas A&M University, USA); Luis Rodriguez (Texas A&M University, USA); Rujun Gao, Karan Watson and Astrid Layton (Texas A&M University, USA); D. Chris Seets (Texas A&M University, USA)

10:00 – 11:30

WIP-33: Computing #7 [WIP]

Room: HULLABALOO

Focus on Early Misconceptions in the Use of Variables and the Assignment Operator to Facilitate Progress in Learning Computer Programming

Candido Cabo (New York City College of Technology/City University of New York, USA)

Developing and Documenting Problem-Solving Strategies for Computer Programming Before Code Writing

Candido Cabo (New York City College of Technology/City University of New York, USA)

Exploring the Potential of Large Language Models to Generate Formative Programming Feedback

Natalie Kiesler (DIPF Leibniz Institute for Research and Information in Education, Germany); Dominic Lohr (Friedrich-Alexander University Erlangen-Nuremberg, Germany); Hieke Keuning (Utrecht University, The Netherlands)

A scalable approach to support computer science students in their learning and preparation as software engineers

Sathya Narayanan (California State University, Monterey Bay, USA); Leslie Maxwell, Mariana Anita Garcia and Utsab Saha (California State University Monterey Bay, USA); Tyler Menezes (CodeDay, USA)

Identification of Threshold Concepts for Intermediate Computer Science Students

Brian M. McSkimming (University of Oklahoma, USA); Sean Mackay and Adrienne Decker (University at Buffalo, USA)

10:00 – 11:30

WIP-34: Professional Practice #5 [WIP]

Room: OAK

Designing a Toolkit for Dissemination

Kathleen E Cook (Seattle University, USA); Jennifer Turns (University of Washington, USA); Yen-lin Han, Greg Mason and Teodora Rutar Shuman (Seattle University, USA)

Communication and management: key pieces in the consolidation of companies in Public Institutions of Higher Education.

Liseth Gil Guerrero and Rosa Maria Valles Ruiz (Autonomus University of Hidalgo State, Mexico)

Detailed Program – Saturday, October 21st

New Perspectives on Observing Newton's Rings

Ming-Feng Lu (Beijing Institute of Technology & Beijing Key Laboratory of Fractional Signals and Systems, China); Jin-Min Wu (Beijing Information Science and Technology University, China); Wenming Yang (Shanghai Jiao Tong University, China); Feng Zhang and Ran Tao (Beijing Institute of Technology, China)

Enculturation of Students to Engineering and COVID's Impact Associated

Noemi Mendoza (Texas A&M, USA); Allison Esparza (TEXAS A&M UNIVERSITY, USA); Karen Rambo-Hernandez (Texas A&M University, USA); Bimal Nepal (USA)

Exploration and Research on the Open and Shared New Engineering Maker Practice Education

Zhibo Sun and Zhilong Li (Beihang University, China); Zheng Qian (Bei Hang University, China); Haitao Qi and Chengkun Shi (Beihang University, China)

10:00 – 11:30

WIP-35: Diversity and Broadening Participation #7 [WIP]

Room: ROSS I

Investigating the predictive relationship of grade point average (GPA) on engineering students' enrollment in entrepreneurial education programs: A Decision Tree Analysis

Prateek Shekhar, Tarique Hasan Khan, Sanjeet Gajjar and Heather Duff (New Jersey Institute of Technology, USA)

Spaces and Practices within University Makerspaces

Madison E Andrews and Audrey Boklage (University of Texas at Austin, USA)

Work-in-Progress Paper: Using active learning educational software to improve Hispanic students learning at an HSI

Anna Stepanova (Texas A&M University, USA); Saira Anwar (Texas A&M University, USA); Tracy Hammond (Texas A&M University, USA)

Seeking Alignment: Exploring Underrepresented Minority Students' Motivations to Pursue Doctoral Degrees in Engineering

Abimelec Mercado Rivera (Arizona State University, USA); Marta L Cano and Eduardo Rodriguez (Rowan University, USA); Mayra Artilles Fonseca (Arizona State University, USA); Juan M Cruz (Rowan University, USA); Holly Matusovich (Virginia Tech, USA); Stephanie Adams (University of Texas Dallas, USA)

10:00 – 11:30

WIP-36: Diversity and Broadening Participation #8 [WIP]

Room: ROSS II

Using Collaborative Autoethnography to Investigate Engineering Journeys

Diana A. Chen, Gordon Hoople and Susan M. Lord (University of San Diego, USA); Joel Alejandro Mejia (The University of Texas at San Antonio, USA)

Detailed Program – Saturday, October 21st

A Summer Introductory Programming Course with Diversity Awareness

Isabela Ortiz (Uniandes, Colombia); Kelly Garcés (Universidad de Los Andes, Colombia); Jaime Torres (Uniandes, Colombia); Ali Malik (Stanford University, Colombia); Alejandro Espinal (Universidad del Norte, Colombia)

Theoretical perspectives from organizational psychology on the role of family-work balance in women's departure from the engineering profession

Christina A. Pantoja (Campbell University, USA); Joyce B. Main (Purdue University, USA)

A Peer-to-Peer Guide on Academic Transformation in Research-to-Practice of STEM Learners that Promote Project Accessibility for Community Impact

Willie L. Brown, Jr (University of Maryland Eastern Shore, USA)

Development of a Situational Judgment Inventory for Marginalized Student Support

Malini M Josiam, Artre Turner and Walter C. Lee (Virginia Tech, USA)

Dimensions of Equity: Undergraduate Research through Vertically Integrated Projects at Five Institutions

Julia Sonnenberg-Klein (Georgia Institute of Technology, USA); Jack Bringardner (New York University, USA); Edward Coyle (Georgia Institute of Technology, USA); Robert Kukta (Stony Brook University, USA); Donna Llewellyn (Boise State University, USA); Nichole Ramirez and Carla B. Zoltowski (Purdue University, USA)

Experiences of Two Exemplar Women with Coping Self-Efficacy during Undergraduate Engineering

Rawle D. Sookwah and Sona Gholizadeh (University of South Carolina, USA)

10:00 – 11:30

WIP-37: K12 STEM Education #6 [WIP]

Room: EAGLE

Exploring Early Computer Science Education: Beliefs, Attitudes and Perceptions within Project-based and Extracurricular Learning Approaches

Jacob Robbins (Texas A&M University, USA); Stephanie Philipp and Lauren Strickland (University of Tennessee at Chattanooga, USA)

Developing a tool for the assessment of systems thinking in K-12 settings

Malle R Schilling and Jacob Grohs (Virginia Tech, USA)

Adventure Alongside AI into STEM Education

Sydney O Singer, Benjamin J Haines and Mehdi Roopaei (University of Wisconsin - Platteville, USA)

Developing aerospace pathways through K12 community science activities

Wilhelm Friess (University of Maine, USA); Seth W Campbell (University of Maine & Foundation for Glacier & Environmental Research, USA); Karl Kreutz (University of Maine, USA); Barbara Stewart (Bangor High School, USA)

Detailed Program – Saturday, October 21st

10:00 – 11:30

WIP-38: Attitudes and Perceptions #3 [WIP]

Room: REVEILLE I

Beyond Summer Reading: Enabling Covert Student Learning Through a Cross-Campus Connecting Theme

Laura Fiss and Brett Hamlin (Michigan Technological University, USA); Heather Love (University of Waterloo, USA); Linda Ott, Charles Wallace and Steven Walton (Michigan Technological University, USA)

Early prediction of first-term math grades using demographic and survey data

Pamela Bilo Thomas (University of Louisville, USA); Campbell R. Bego (University of Louisville & J. B. Speed School of Engineering, USA); Arinan Dourado and Xiaomei Wang (University of Louisville, USA)

Characterizing How Engineering Undergraduate Students Define and Develop Data Proficiency

Godwyll Aikins (Florida Institute of Technology Melbourne, USA); Catherine Berdanier (Pennsylvania State University, USA); Kim-Doang Nguyen (Florida Institute of Technology, USA)

10:00 – 11:30

WIP-39: Attitudes and Perceptions #4 [WIP]

Room: REVEILLE II

The Impact of an Innovation Education Program on Alumni Entrepreneurial and Innovation Self-Efficacies

Kei Hysi, Sheri Sheppard, Helen L. Chen and George Toye (Stanford University, USA); Hana Milanov (Technical University of Munich, Germany)

Work-in-Progress: A Study of Chemical Engineering Student Biases Regarding Teamwork and DEI Issues across the Curriculum

Richard T Cimino (New Jersey Institute of Technology, USA)

The Effect of a Mastery Learning Course on Rafael's Mindset

Carlos L Perez and Dina Verdin (Arizona State University, USA)

Impact and Experiences of an Engineering Professor becoming a Student while Teaching

Jennifer Hasler (Georgia Institute of Technology, USA)

Robotics Innovative Technologies and Education (RITE) Lab: A multi-disciplinary Human-Robot Interaction (HRI) Lab

Ashraf Gaffar and Mohamed Y. Selim (Iowa State University, USA)

Physical Software Design: An Innovative Instructional-Based Method Using Project-Based Learning

Ashraf Gaffar and Mohamed Y. Selim (Iowa State University, USA)

Detailed Program – Saturday, October 21st

10:00 -11:30

WIP-40: Attitudes and Perceptions #5 [WIP]

Room: TRADITIONS

Computational vision for analyzing student emotions in e-Learning: a preliminary Study

Marcos Devaner Nascimento (Universidade de São Paulo, Brazil); Francisco Oliveira, Victor Wilker dos Santos de Oliveira, Rondinelli Moura Machado and Mitchel Bomfim (Universidade Estadual do Ceará, Brazil); Adson Roberto P Damasceno (Ceara State University, Brazil)

Interpersonal and Intrapersonal Factors Associated with Academic Belonging of Engineering Graduate Students

Olanrewaju Paul Olaogun and Nathaniel Hunsu (University of Georgia, USA); Denise R. Simmons (Virginia Polytechnic Institute and State University, USA); Isaac D Dunmoye (University of Georgia, USA)

Using Vignettes to Elicit Students' Understanding of Dispositions in Computing Education

Renée McCauley (College of Charleston, USA); Mihaela Sabin (University of New Hampshire, USA); Amruth N. Kumar (Ramapo College of New Jersey, USA); Bonnie MacKellar (St. John's University, USA); Natalie Kiesler (DIPF Leibniz Institute for Research and Information in Education, Germany); John Impagliazzo (Hofstra University, USA); Rajendra Raj (Rochester Institute of Technology, USA)

Conforming and Non-Conforming Motivations and Behaviors in Students' Holistic Learning Journeys

Vaani Bhatnagar, Adhishri Hande, Prisha Bhatia and Yevgeniya V Zastavker (Olin College of Engineering, USA)

Work-in-Progress: Exploring Student Learning Outcomes During a Ghana Learning Abroad Experience

Daniel W Burleson, Jerrod A Henderson and Maggie Mahoney (University of Houston, USA)

Measuring engineering culture: a preliminary approach using perceptions of meritocracy and competition

Matilde Sánchez-Peña and Syed Ali Kamal (University at Buffalo, USA); Nichole Ramirez (Purdue University, USA)

12:00 - 12:40

PST: Poster Session and Grab & Go Lunch

Room: A&M Hotel Century Ballroom

Assessment during the pandemic COVID-19

Ela Zur (The Open University of Israel, Israel); Tamar Vilner (The Open University of Israel, Israel)

Infusing Culturally Responsive Instruction with Gamification: Early Findings from an Engineering Design Activity for High School Migratory Youth

Dina Verdin and Ulises J Trujillo Garcia (Arizona State University, USA)

Detailed Program – Saturday, October 21st

Work in Progress (Research Category): How do online student engagement analytics relate to course performance in online and in-person engineering laboratory environments?

Kimberly Cook-Chennault and Ahmad Farooq (Rutgers, the State University of New Jersey, USA)

Exploration on how to slow down students' learning curve in experimental teaching through freshman technical training

ShanShan Li (Tsinghua University, China)

ABET Outcome Impact Analysis of Online Versus On-campus Software Engineering Students During COVID-19

Kevin Gary and Douglas Sandy (Arizona State University, USA)

Emulating Industry Practices in Computer Science Classrooms

Tajmilur Rahman and Joshua Nwokeji (Gannon University, USA)

Towards Deep-Learning Text Classifiers for Formative Assessment Based Diagnostics

Wassim Mahfouz and Heinz- Dietrich Wuttke (Technische Universität Ilmenau, Germany)

Using Teamwork in an In-person Class in the Decline of the Pandemic

Mohamed Zaghoul (The University of Pittsburgh, USA); Amr Hassan (University of Pittsburgh, USA)

A Laboratory in Machine Learning for Electrical Microgrid Courses using Real Data

Roxana Melendez-Norona and Maria M. Larrondo-Petrie (Florida Atlantic University, USA)

Navigating Complex Collaboration Boundaries in Engineering Education: Exploration of Students' Experiences

Anuli Ndubuisi, James Slotta, Elham Marzi and Philip Asare (University of Toronto, Canada)

A Vertically Integrated Projects Model for Multi-Institution and Multi-Discipline Undergraduate Research in Radio Frequency AI/ML

Alyse M Jones (Virginia Tech & National Security Institute, USA); Sonya Dennis (Morehouse College, USA); Colleen Bartos (Virginia Tech, USA); Amos Johnson (Morehouse College, USA); Alan J Michaels (Virginia Tech & Hume Center for National Security and Technology, USA); William C Headley (Virginia Tech, USA)

Private Blockchain Platform and Consensus Algorithm Labs for Undergraduate Level

Emil Salib (James Madison University, USA)

Biological Information Representation to Support Engineering Students' Ability to Think "Outside the Box"

Hadear I Hassan and Astrid Layton (Texas A&M University, USA)

Critical Success Factors of Student Success in the Construction Engineering and Management Program

Jeyoung Woo (California State Polytechnic University, Pomona, USA); Jinsung Cho, Yasser Salem, M. Ron Yeung and Ghada M. Gad (California State Polytechnic University Pomona, USA)

Detailed Program – Saturday, October 21st

An Educational Modeling Software Tool That Teaches Computational Thinking Skills Through STEM Classes

Dominika Bobik, Pradnya Pendse, Katie H Ulinski, Trevor X Petrin, Rhys W Brockenshire and Leo C. Ureel II (Michigan Technological University, USA)

Women Self-Authoring Engineering Identity from the Bottom-Up

Rick Evans (Cornell University & College of Engineering, USA); Mojdeh Asadollahipajouh (University of Nebraska-Lincoln, USA); Stacey Kulesza (Texas State University, USA); Jia Liang (Kansas State University, USA); Grace Panther (University of Nebraska-Lincoln, USA)

Peer-to-Peer Engagement using Project Based Learning for NASA Design Concepts with 3D Printing Makerspace Development to Support Pre-College Engineering Education and Innovation at an HBCU

Willie L. Brown, Jr and Etahe Johnson (University of Maryland Eastern Shore, USA)

Financial Education: Bibliometric Analysis from 1989 to 2023

Ery Tri Djatmika and Madziatul Churiyah (Universitas Negeri Malang, Indonesia)

Predicting Student Outcomes Through Artificial Intelligence for Intervention in Aerospace and Mechanical Students

Caroline Salas, Angel Flores-Abad, Meagan R. Kendall and Miguel Cedeno (University of Texas at El Paso, USA); Louis Everett (UTEP, USA)

A Quantitative Approach: Computer Science Path for Muslim vs Non-Muslim Female Students

Maral Kargarmoakhar and Monique Ross (Florida International University, USA)

Perceived capabilities of Arduino-like systems by engineering students and faculty

Maria-Isabel Carnasciali, Christopher J Martinez and Francis Pellicano (University of New Haven, USA)

Modern technology usage in Mathematical education in schools Grade (1-9)

Khaula Zeeshan (University of Jyväskylä, Finland); Timo Hämäläinen and Pekka Neittaanmäki (University of Jyväskylä, Finland)

Ensuring Quality in Assessments

Divya Nalla (Nalla Malla Reddy Engineering College, India)

Competency Analysis in Computer Science and Engineering: The State of the Art

Joshua Nwokeji, Tejas Veeraganti Manjunath and Tajmilur Rahman (Gannon University, USA)

Dual-Form Mentoring: Addressing the Disparity of Hispanics in the STEM Workforce

Annalisa Perez, Diane E. Golding and Helen Geller (University of Texas at El Paso, USA)

War and Education: How Russian Invasion Impact STEM Education in Ukraine

Joshua Nwokeji (Gannon University, USA); Ayodele Olagunju (University of Saskatchewan, Canada); Purevdorj Enkhjargal (Gannon University, USA)

Detailed Program – Saturday, October 21st

Faculty Training - learning by doing approach

Divya Nalla (Nalla Malla Reddy Engineering College, India)

Critical Thinking Multimodal Assessment Feedback in Entrepreneurship and Innovation

Mário Minami (Federal University of ABC & Information Engineering, Brazil); Celso Setsuo Kurashima (Federal University of ABC (UFABC), Brazil)

The effects of formative assessment on students' attitude toward learning, grade achievement and design skills: Perspectives from a sophomore-level digital logic design-based course

Muhammad Zilany (Texas A&M University at Qatar, Qatar)

Characterizing and Supporting Thriving Neurodivergent Engineering Students

Julianna Gesun (University of New Hampshire, USA)

Philosophizing to Create

Melany M Ciampi (Safety, Health and Environment Research Organization & President, Portugal); Claudio R Brito (Science and Education Research Organization, Portugal)

Improving Equity, Diversity, and Inclusion at Canadian Engineering Programs: With What Data?

Philip Asare and Siva Sivaramakrishnan (University of Toronto, Canada)

Assessing Engineering Judgment

Marie Stettler Kleine and Dean Nieuwsma (Colorado School of Mines, USA)

Sustaining quality in teaching learning - an institutional perspective

Divya Nalla (Nalla Malla Reddy Engineering College, India)

Artificially Intelligent Agents in VR Military Training

Matthew Montebello (University of Malta, Malta)

Detailed Program – Saturday, October 21st

12:00 – 12:40

PST-3: [STUDENT PANEL] Students' Perspective of Post-Affirmative Action: Implication and Consequence of Higher Education

Room: ROSS I

Students' Perspective of Post-Affirmative Action: Implication and Consequence of Higher Education

Siqing Wei (Purdue University, USA); Jerry Yang (Stanford University, USA); Rachel Figard (Arizona State University, USA); Marcus Vinicius Melo de Lyra (Ohio State University, USA)

12:00 – 12:40

PST-4: [STUDENT PANEL] Navigating New Horizons: Exploring Graduate Students' Transitions to Engineering Education

Room: ROSS II

Panel Title: Navigating New Horizons: Exploring Graduate Students' Transitions to Engineering Education

Atayliya N Irving (University of Florida, USA); Jeremy A. M. Waisome (University of Florida, USA)

12:00 – 12:40

PST-5: [STUDENT PANEL] From Campus to Community: Nurturing Global Leadership in Student Engineers

Room: CORPS I

From Campus to Community: Nurturing Global Leadership in Student Engineers

Chase Johnson (Texas A&M University, USA), Jessica V Williams (Texas A&M University, USA)

Description: The transition from undergraduate life to the complex world is a significant one. For student engineers who've taken on leadership roles during their college years, the challenges and opportunities that lie ahead in the global engineering environment can be both exciting and daunting. This panel brings together student leaders taking an engineering courseload to discuss the tools, experiences, and curricula that best prepare them for leadership in the diverse, global engineering industry. It includes insights on how to encourage leadership development both in and out of the classroom.

Sub-topics to be Covered:

- Leadership in Practice: Reflections on how student leadership roles in college serve as mini-incubators for the challenges of leading diverse teams in global corporations.
- Balancing Technical and Soft Skills: The role of academic curricula in fostering not just engineering skills, but also communication, collaboration, and cultural sensitivity.
- Building Networks Early: Leveraging college leadership roles to establish professional relationships, international collaborations, and mentorships which are essential in the global engineering landscape.
- Understanding the Global Context: Experiences from student-led international projects, exchanges, or collaborations that have provided a foundational understanding of engineering challenges and solutions from a global perspective.

- **Mentorship and Guidance:** The importance of finding and learning from mentors who've successfully transitioned from student leaders to industry leaders.
- **Service in Engineering Identity:** Building a sense of civic engagement as part of engineering and encouraging community service in all its forms.
- **Ethical Leadership:** The role of ethics in leadership, especially in engineering projects that impact diverse communities around the world.
- **Charting the Path Forward:** Advancing Ethics, Civics, and Cultural Competence.
- **Adapting to Rapid Change:** Insights into how student leaders adapt to rapidly changing technologies and methodologies while considering cultural and global implications.
- **Recommendations for Academic Institutions:** What additional support, training, or experiences would student leaders recommend to institutions to better prepare the next generation of engineers for leadership roles in a global context?
- By focusing on these sub-topics, the panel can provide valuable insights for educators, institutions, and industry representatives on how to develop engineers who build technologies for social good in a diverse, global engineering world.

12:00 – 12:40

PST-9: [STUDENT PANEL] Estimating Multisensorial Experiences: Designing and Implementing a Multimodal Lab

Room: CORPS II

Estimating Multisensorial Experiences: Designing and Implementing a Multimodal Lab

Edwin Marte Zorrilla, Gadhaun Aslam, Naqash Gerard, Idalis Villanueva Alarcón and Isabella Victoria (University of Florida, USA)