FIE 2024

Frontiers in Education 2024

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2024.fie-conference.org

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Welcome Message from the General Chair

Dear Colleagues and Friends of the Frontiers in Education (FIE) Community,

It is with great excitement and honor that I welcome you to the 2024 Frontiers in Education Conference! As we gather for the 54th year in Washington D.C., we find ourselves navigating a time of extraordinary transformation in engineering and computing education. This year's theme, "Embracing the Challenges and Transforming Engineering and Computing Education in a Technology-Enhanced World," speaks to the urgency of leveraging emerging technologies—most notably, artificial intelligence (AI)—to reshape the way we teach, learn, and prepare future generations for the rapidly evolving world of work.

Since its founding in 1971, the FIE Conference has served as a critical platform for educators, researchers, and practitioners worldwide to exchange knowledge, share breakthroughs, and collaborate on innovative solutions for the future of education. With the continued support of our Society co-sponsors—the IEEE Education Society, the ASEE Educational Research and Methods (ERM) Division, and the IEEE Computer Society—FIE remains at the forefront of addressing the dynamic challenges in engineering and computing education.

At this year's conference, we place a spotlight on the transformative potential of artificial intelligence in education. AI is not just a tool for innovation—it is revolutionizing the ways we understand and approach teaching, learning, and problem-solving. From intelligent tutoring systems that adapt to individual student needs, to AI-driven data analytics that inform curriculum design, to machine learning applications that enhance both classroom and remote learning environments—AI is changing the landscape of education as we know it. As educators, we are tasked with embracing this technology not only to improve outcomes but also to prepare our students to thrive in an AI-driven world.

We are also proud to recognize the invaluable support of this year's university sponsors: The University of Oklahoma Polytechnic Institute, the University of Nebraska-Lincoln College of Engineering, and the University of Cincinnati College of Engineering and Applied Science. These institutions are at the cutting edge of research and practice in engineering and technology education, and their partnership has been instrumental in bringing this conference to life.

This year's program is more dynamic than ever, with paper presentations, workshops, panel discussions, and special sessions dedicated to a broad spectrum of topics. From AI and machine learning tools in education to cutting-edge research on curriculum transformation and diversity initiatives, the program reflects our collective commitment to rethinking the future of education in a world increasingly shaped by technology. We are also thrilled to host several distinguished keynote speakers, who will provide their insights into how AI and other emerging technologies are reshaping the very fabric of education.

In addition to the rich academic content, FIE 2024 offers numerous opportunities to build connections, exchange ideas, and collaborate with peers from around the globe. Whether you are presenting your latest research, seeking fresh perspectives, or exploring potential partnerships, this conference provides a space to foster innovation and growth. We encourage you to actively engage, challenge ideas, and embrace the possibilities that AI and other advanced technologies offer for the future of education.

I would also like to extend my deepest gratitude to the FIE Steering Committee, the Technical Program Committee, the reviewers, and all the volunteers whose tireless efforts have made this event possible. A special thanks to our university sponsors and exhibitors, whose support is crucial to the success of this conference. Together, we are building a future where technology and education go hand in hand, paving the way for the engineers and problem-solvers of tomorrow.

Welcome to the 54th convening of FIE! I look forward to an inspiring and productive conference filled with thought-provoking discussions and innovative collaborations that will shape the future of engineering and computing education.

On behalf of the Technical Program Committee,

General Chair, FIE 2024

P.K. Imbrie, Ph.D.
Vice Provost for Academic Effectiveness
Professor of Aerospace and Mechanical Engineering
The University of Oklahoma

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2024 IEEE Undergraduate Teaching Award

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R. IRIS BAHAR

For innovative undergraduate teaching and transformative student mentoring that champion inclusivity in engineering and examine societal impacts of technology

As a professor at Brown University, Iris Bahar noticed the difference in student diversity between introductory level courses in comparison to advanced courses. Frustrated with the underrepresentation of women and historically marginalized groups in advanced engineering classes, she researched the root causes and concluded that more interdisciplinary, design-oriented courses with opportunities for creative license would engage a wider spectrum of students and help retain diversity. Bahar then designed a wildly popular robotics course that succeeded in attracting non-traditional students. Her innovative teaching approach emphasizes interactive, collaborative elements and incorporates ethical considerations and societal inquiries, encouraging students to think holistically about global issues. Bahar continues to inspire and innovate while championing diversity, equity, and inclusion in education.

An IEEE Fellow, Bahar is Department Head & Professor of Computer Science, Colorado School of Mines, Golden, Colorado, USA.

Pre-Conference Workshops

Let's Play- Improving our Teaching in the Medium of Board Games

Sunday, October 13 | 9:00 – 12:00

Room: Fairchild

Karen C. Davis
Miami University

Peter A. Jamieson
Miami University

The "Let's Play" initiative started in 2022 (http://www.drpeterjamieson.com/LETS_PLAY/) and has resulted in us having a deeper understanding of how board games can be used as role-reversal shortened experiences that help teachers learn and experience different ideas as it relates to better teaching. We have implemented workshops on these ideas at various levels since, and continue to push the ideas on how boardgames provide a great medium to learn how to improve our teaching skills in the space of professional development. Our goal for this workshop is to expose faculty and leaders to the benefit of using board games to experientially convey focusing on how boardgames are great experiential systems in which teachers can experience what it is like to be a learner again. In this, they can better understand why evidence-based instructional practices (EBIPs) are useful teaching approaches and should be included in our own teaching.

Pre-Conference Workshops (cont)

Unfolding the Layers of the Engineer of 2050 through Faculty Development and Change

Sunday, October 13 | 9:00 – 12:00

Room: Cardozo

Kristi J. Shryock
Texas A&M University

Karan Watson
Texas A&M University

This workshop will equip engineering educators with the tools and strategies necessary to adapt their practices to the rapidly evolving landscape of technology and engineering. This workshop will focus on the DANCE (Designing Adaptations for the Next Changes in Education) model, a framework developed to help faculty navigate and lead changes in engineering education among the rising frequency of disruptions.

The Engineer of 2050 requires a multidimensional education that not only incorporates advanced technical knowledge but also emphasizes global competence, growth mindset, and a proactive approach to lifelong learning. This workshop will explore how the DANCE model facilitates such development through a structured yet adaptable framework. The model emphasizes the need for faculty to not simply respond to changes but to anticipate and prepare for them, enabling a dynamic and forward-thinking educational environment.

Participants will gain deep insights into the DANCE model, which integrates change management theories and practices within the context of engineering education. This includes understanding the dual strands of change - organizational and individual - and how they interact within educational settings.

Pre-Conference Workshops – Sunday, October 13 (cont)

Design Signatures in the Wild: Making the Invisible Visible (The Directors Cut)

Sunday, October 13 | 9:00 – 12:00

Room: Gunston

Daria Kotys-Schwartz
University of Colorado

Cynthia Atman
University of Washington

Reid Bailey
University of Virginia

Susannah Howe
Smith College

Micah Lande
South Dakota School of Mines & Technology

This workshop engages with the question: how might we help students become better able to intentionally engage in a design process, as part of an effort to help them become reflective practitioners of design? On a theoretical level, this work connects to the diversity of design processes and research on metacognition. This workshop also builds on prior research on helping students to become more metacognitively aware of their current state in a design process. In this 3-hour workshop, participants will learn how to build self-awareness for their students and themselves through self-tracked design timelines (i.e. Design Signatures). The workshop facilitators have extensive experience implementing these concepts in their design teaching.

Students are excited about what they are able to learn, as demonstrated by the following: "[Tracking our progress] kept us present and reminded us of phases that we needed to revisit or had forgotten." [First-year student] "It made me think more about where we were in the design process." [Junior-level student] Each participant will develop and analyze their own Design Signatures during a hands-on design/build activity. Additionally, the pre-conference workshop attendees will explore how Design Signatures are used in multiple design teaching contexts. With these Design Signatures visible in front of them, faculty can explicitly see how they can teach students to better reflect on an otherwise invisible design process.

Pre-Conference Workshops (cont)

Affect and Identity in Engineering Education: Understanding How Emotions, Feelings, and Values Shape Our Students Work and Contribute to Their Engineering Identity

Sunday, October 13 | 13:00 – 16:00

Room: Gunston

Jessica Swenson
University of Buffalo

Emma Treadway
Trinity University

This workshop will equip participants to begin engaging with their students' emotions as a powerful tool for improving learning and building engineering identity. This workshop draws on the results of our National Science Foundation study on affect and engineering identity. Our project examines engineering students' affect (their emotions, feelings, and beliefs) experienced while problem-solving or doing design. While engineering is often seen as purely rational, our data and previous studies have shown affect to be an important part of students' experiences.

Workshop participants will be introduced to important concepts related to affect, including local affect, affective pathways, global affect, and meta-affect (DeBellis & Goldin, 2006): an affective pathway consists of the moment-to-moment feelings (local affect) experienced while solving a disciplinary problem. Depending on how these problem-solving experiences end, positively or negatively, the pathway may influence a student's overall (global) affect towards the discipline. These affective pathways are shaped by meta-affect, or a student's cognition and feelings about their feelings. For example, we have seen some students understand that struggle is part of the engineering process. When they become frustrated in a design problem, they don't consider this to be negative but instead a normal part of engineering. Our team has seen examples of this when students are engaged in complex problem-solving experiences, including first year design or more ill-structured problems in their engineering science courses.

During the workshop, we will help participants understand how students' affective experiences can influence their learning (Muis et al. 2018; Pekrun, 2006) as well as the development of an engineering identity (Godwin, 2016; Hazari et al., 2010), particularly when engaging in complex problem-solving (Swenson et al., 2024). The development of a student's engineering identity has been shown to influence whether a student stays in engineering or not, thus having implications for retention of students in the discipline. Participants will reflect on their course contexts and students' affective experiences, and develop strategies for emotional scaffolding (Lönngren et al., 2021) of complex problems to promote learning and identity development. We will share our survey instrument for measuring students' affective pathways (Treadway et al. 2022; 2023), how we analyze our results, and our findings from using this question.

Pre-Conference Workshops (cont)

Decolonizing What? Limits and Opportunities for Developing Equitable Syllabi in Computer Science and Engineering Education

Sunday, October 13 | 13:00 – 16:00

Room: Fairchild

Gabriel Medina-Kim
Rennselaer Polytechnic Institute

Chosang Tenzin
California Polytechnic State University

An Huynh
California Polytechnic State University

Lynne Slivovsky
California Polytechnic State University

Jane L. Lehr
California Polytechnic State University

Lizabeth Thompson
California Polytechnic State University

Many engineering and computing instructors are unsure how to oppose the discriminatory, assimilationist politics of engineering education, which continues the oppressive legacies of engineering practice and US education. Although these inequalities are structural-distributed, recursive, and reinforcing-instructors have a strong influence over the classroom and its syllabus, especially as an informational and rhetorical device for orienting students to their classes (Jones, 2024). But how does the discourse of "decolonizing your syllabus" fit into engineering and computing education, let alone general equity-minded practices (Center for Urban Education, 2017)? This workshop brings research on equity in engineering education to inform the design of syllabi in undergraduate engineering courses.

The workshop begins by introducing research on equity initiatives in STEM education and the role of the syllabi. This includes research that pertains to US education broadly, such as the influences of the industrial model of education (Katz, 1971) and the legacy of cultural assimilation (Pratt, 1892). This also includes research specific to engineering education, such as its culture of political disengagement (Cech, 2013) and the construction of a social/technical divide (Riley, 2008, 2017). The theoretical introduction concludes by discussing the opportunities and limitations to decolonization in engineering education, especially through pushes to "decolonize your syllabus" (Tuck & Yang, 2012; Liboiron, 2019; King, 2016). [See More]

Pre-Conference Workshops (cont)

Designing Transformative Engineering Education Projects Towards National Science Foundation Funding Success?

Sunday, October 13 | 13:00 – 16:00

Room: Cardozo

Olga Pierrakos
Wake Forest University

Matthew Verleger
Embry-Riddle Aeronautical University

Lulu Sun
National Science Foundation

Christine Delahanty
National Science Foundation

Engineering education transformations can vary from curricular innovations across one course to engineering curricula, to pedagogical innovations that span one course or curricula, to advising and extra-curricular innovations, to mentoring models that support student success, to fundamental research that enable us to understand the student or educator experiences, to institutional transformations that build bridges across programs, to building partnerships with industry, etc. The National Science Foundation (NSF) annually awards millions to transform STEM education from kindergarten through higher education and beyond. Specific to engineering education, there are several NSF programs that target engineering education projects spanning research types, engineering disciplines, student populations, partnerships, impacts, etc. Just some of these NSF programs include: IUSE, IUSE/PFE RED, ECR, CAREER, ExLENT, ATE, S-STEM, ADVANCE, HBCU-UP, TCUP, BPE, IUCRC, RIEF, RFE, etc. The NSF funding opportunities are many, and while program funding levels, success rates, and target areas vary by NSF programs, the process of crafting a strong NSF proposal offers many benefits even if funding is not possible. This session will focus on helping new investigators in the preparation of engineering education research projects that could be positioned for NSF submission.

This session is built on the assumption that most engineering educators who teach in undergraduate engineering education programs have a MS or PhD in an engineering discipline but may lack education research expertise to support key initiative to transform engineering education.

Panels

A Vision for the Next 15 Years of Computing Education

Monday, October 14 | 8:00 – 9:30

Room: Columbia 3-4

Adrienne Decker
University at Buffalo

Monica McGill
Institute for Advancing Computing

Briana Morrison
University of Virginia

Manuel Perez-Quinones
UNC Charlotte

Aman Yadav
Michigan State University

The goal of this session is to continue the presentation of a final report from an NSF sponsored workshop to envision the future direction of computer science education at the undergraduate level in the next 15 years. In presenting the ideas of the report, the workshop leaders and principal final report authors hope to create a dialog within the community about how to embrace the goals and ideals put forward in the report of rethinking the computing curriculum and working to infuse equity, social justice, and humanities as part and parcel of the discipline for all students. Anticipated Audience The anticipated audience are those interested in thinking about the future direction of computer science curricula, whether it be as decision makers in a department or simply faculty thinking about issues within their computing courses. [See More]

Panels (cont)

Bringing Humanitarian Engineering into ECE Programs through Electricity Access Education

Monday, October 14 | 10:30 – 12:00

Room: Columbia 3-4

Pritpal Singh
Villanova University

Susan Lord
University of San Diego

Henry Louie
Seattle University

There is a need for a significant increase in US workforce development in the electric energy sector as an increasing number of people in this field are close to retirement age. The field of humanitarian engineering has been found to attract a diverse range of students and motivate students to both engage in and persist through their engineering education. Yet, most of the students who are involved in the humanitarian engineering field tend to be students outside the electrical engineering. Incorporating themes related to humanitarian engineering may help diversify the field of electrical engineering which lags behind other engineering disciplines in participation of women, African American, and Latinx students in the USA. [See More]

Panels (cont)

Preparing a Competitive Nomination for IEEE and ASEE Fellow and other Competitive Awards

Monday, October 14 | 13:30 – 15:00

Room: Columbia 3-4

Bruce Wheeler
University of California

Barbara Oakley
Oakland University

Anthony Maciejewski
Colorado State University

Michael Loui
Perdue University

Cynthia Furse
University of Utah

Cynthia Finelli
University of Michigan

Laura Bottomley
North Carolina State University

Preparing an application or nomination for a significant professional award is important both for the individual being nominated, as well as for the society seeking to recognize high impact and achievement. IEEE elevates less than one tenth of one percent of the membership to the Fellow grade each year, which means that many qualified nominees may not be selected. To maximize the chances of selection, the nominator should carefully prepare the materials, paying close attention to stated requirements, but there are always additional tips to produce an optimum package. Societies and organizations benefit from awarding recognition to members who have significant achievements in their professional careers. This can raise the profile of the society and brings with it concomitant benefits to all society members. [See More]

Panels (cont)

Student Panel: Exploring Mental Health and its Relationship with Engineering Culture

Monday, October 14 | 15:30 – 17:00

Room: Columbia 3-4

Sowmya Panuganti
Perdue University

Alice Pawley
Perdue University

Justin L. Hess
Perdue University

Isil Anakok
Virginia Tech

Studies show over 60% of college students in the United States struggle with at least one mental health problem (Flannery, 2023). A variety of factors can trigger mental health issues including but not limited to, finances, climate, sociopolitical issues, and cultural norms (Riachi et al., 2022). Engineering students operate within many distinct cultures including an "engineering culture". This culture is known to be exclusive, competitive, and very male-dominated (Cromley et al., 2023; K. Jensen, 2021). Engineering's toxic culture can cause depression, anxiety, and a lack of belonging for students (K. J. Jensen & Cross, 2021). Leaning on Godfrey and Parker's (2010) framework of different "levels" of engineering culture and norms. In this panel, we lean on three dimensions: "An engineering way of doing", "being an engineer", and "relationships". "An engineering way of doing" has to do with shared beliefs about how teaching and learning are accomplished in engineering (Godfrey & Parker, 2010). [See More]

Special Sessions

Amplifying Voices Through Animaker Animation: Results from a Longitudinal Study With Latino/a/x Engineering Students

Monday, October 14 | 17:00 – 18:30

Room: Columbia 3-4

Joel Alejandro Mejia
The University of Texas at San Antonio

Neethu Paul
The University of Texas at San Antonio

Sofia Hernandez
The University of Texas at San Antonio

The special session will delve into the theoretical foundations of Pláticas and Testimonios [3-5], and the importance of amplifying the voices of minoritized populations through multimodal tools [6]. Drawing from the relevant literature on Chicana Feminist Epistemology, discussions in this session will explore the significance of Pláticas and Testimonios as means of amplifying students' voices and experiences. As a data collection method, Pláticas and Testimonios offer a robust means for developing mutual trust between researcher and participant, and become an instrumental method to engage in research practices that unpack experiences of marginalization, vulnerabilities, and lived experiences. In addition, multimodality will be explored in terms of research and pedagogical purposes. Multimodality involves multiple representation (i.e., symbols, equations, visual aids, schematics, writing, simulations) to communicate sociopolitical complexities that impact marginalized populations [6]. Through the analysis of Animaker videos created from research data, participants in this session will examine the practical application of these methodologies and the significance of multimodal literacies.

Special Sessions (cont)

Implementing a Teaching Framework of Critical Consciousness Embedded in Engineering Design Courses

Tuesday, October 15 | 8:00 – 9:30

Room: Columbia 3-4

Joel Alejandro Mejia
The University of Texas at San Antonio

Renata A Revelo
University of Illinois at Chicago

Julio Mendez
University of Illinois at Chicago

In this highly interactive special session, the presenters will engage the audience in learning and testing out various aspects of a teaching framework used to teach critical consciousness (Freire, 1987) topics alongside the engineering design process at two different institutions. Due to the nature of the integration, intergroup dialogue (Gurin et al., 2013) is not implemented in its pure form. Instead, some aspects of dialogue-focused pedagogy are implemented. These include: community guidelines for dialogue, positioning dialogue pedagogy ahead of others and in contrast to argumentation or discussion, learning activities to promote group growth in dialogue.

Special Sessions (cont)

Workshops That Work! Using Evidence-Based Principles for Inclusive and Engaging Workshop Development and Facilitation

Tuesday, October 15 | 10:30 – 12:00

Room: Columbia 3-4

Stephanie Cutler
Penn State University

Ibukun S Osunbunmi
The Pennsylvania State University

The principles of effective, engaging, and inclusive teaching have been well documented and supported through numerous evidence and research-based studies. However, we struggle to encourage the adoption of research-based practices by the broader higher education instructional community. So why don't we apply these same principles when disseminating our research? One approach that has regularly been used to encourage the adoption of new teaching strategies is short, one-time interventions in the form of workshops. Workshops have been a staple of faculty development and dissemination efforts for many years - both at local universities and more broadly. However, not all workshops are as effective as others. Creating an inclusive and impactful workshop requires implementing the same effective, engaging, and inclusive teaching strategies known to be effective in the classroom. [See More]

Special Sessions (cont)

Writing for the IEEE Teaching Excellence Hub

Tuesday, October 15 | 13:45 – 15:15

Room: Columbia 3-4

Steve E Watkins
Missouri University of Science and Technology

The IEEE Teaching Excellence Hub (https://teaching.ieee.org) is an online venue for information that helps faculty with the knowledge and skills they need to enhance their ability to be effective educators. The short article content is peer-reviewed and curated by IEEE experts and is contributed by subject matter experts with a global perspective. Articles are indexed by a set of 23 educational topics which are defined within the site. This peer-reviewed content is subject to a Creative Commons 4.0 International license. Currently, the TEH has 30 short articles and other resources for educator professional development. [See More]

Special Sessions (cont)

Improving Interview Skills Using the Interview Quality Reflection Tool (IQRT)

Tuesday, October 15 | 15:45 – 17:15

Room: Columbia 3-4

James Huff
University of Georgia

Jerrod A Henderson
University of Houston

Sindia Rivera-Jimenez
University of Florida

Amy Brooks
University of Pittsburgh

Prior literature on conducting research interviews tends to emphasize the procedural mechanisms of asking the right questions that are documented in an interview schedule or protocol. While such a focus advances high-quality research interviews, this special session advances the holistic skillset of interviewing, which includes creating a relational presence in the social interaction of the session and posturing oneself as a curious one-sided listener. In this special session, we examine all interactions within the scope of an interview session, all with a particular focus on the skill development of the research interviewer. [See More]

Special Sessions (cont)

Calling All Voices: Transforming Scholarly Perception of an Entrepreneurial Mindset Framework through a Community-Led Delphi Study

Tuesday, October 15 | 17:15 – 18:45

Room: Columbia 3-4

Cheryl Bodnar
Rowan University

Samantha Brunhaver
Arizona State University

Adam R Carberry
The Ohio State University

Prateek Shekhar
New Jersey Institute of Technology

Alexandra M Jackson
Rowan University

Sanjeev M Kavale
Arizona State University

Brendan Rucci
Rowan University

Conceptualizations of entrepreneurial mindset (EM) vary across disciplines. One widely used framework in engineering education is the Kern Entrepreneurial Engineering Network (KEEN) 3C's conceptual framework, which delineates attributes associated with EM: curiosity, connections, and creating value. The 3Cs framework has guided curriculum, faculty, and student development initiatives at KEEN partner schools and beyond. While the framework's flexibility enhances its adaptability among practitioners, its lack of direct association with existing theoretical literature has limited its applicability in educational research and presented challenges in publishing work based on the framework in high-impact journals. This session seeks active participation from FIE attendees in a Delphi study to collectively operationalize curiosity, connections, and creating value, drawing upon existing literature definitions of the constructs and insights from prior practitioner feedback. Additionally, the session will present our findings from a content analysis of the KEEN Engineering Unleashed website, interviews with KEEN legacy leaders involved in the framework's initial conceptualization, and results from our scoping review of relevant literature. By the session's conclusion, participants will gain a deeper understanding of the history of the 3C's conceptual framework and its alignment with existing literature.

Special Sessions (cont)

Smartness as a Fundamental Component of Engineering Classrooms and Culture: Translating Research to Practice

Wednesday, October 16 | 8:00 – 9:30

Room: Columbia 3-4

Rachel L Kajfez
The Ohio State University

Amy Kramer
The Ohio State University

Emily Dringenberg
The Ohio State University

Has anyone ever told you that you have to be smart to be an engineer? Engineering students are typically those who have been socialized within K-12 education to believe that they are smarter than others. Their beliefs and identities around being "smart" are brought with them into our engineering classrooms, which impacts the way they understand themselves as engineers. The first year of engineering school is a particular challenge for many students as they wonder if they are smart enough to be an engineer. For example, many students are finding that they need different learning strategies to keep up with what is happening in class. [See More]

Keynote Speakers

Monday, October 14th | 12:00 - 1:30
Room: Columbia 5-12

Engineering: *Creating the World We Want*
Don L. Millard, Deputy Assistant Director of the Engineering Directorate (ENG)
U.S. National Science Foundation

Abstract: Education is clearly facing a series of opportunities and challenges in response to a number of factors. The effect of the pandemic, changing student population, and advancement/proliferation of technology are but a few issues that are particularly effecting engineering education. This talk will provide a few perspectives on where we stand as a community, lessons learned from prior projects, and how engineering education research and innovation could be used to help advance personalized learning and assessment of engineering knowledge in K-12 and higher education.

Biography: Dr. Millard is currently serving as the Deputy Assistant Director of the Engineering Directorate (ENG) at the National Science Foundation (NSF). He has served in several roles at NSF: as a Division Director, a Deputy Division Director, and a Program Director. He has been involved with the Advanced Technology Education (ATE), the Math and Science Partnership (MSP), and the Transforming Undergraduate Education in Science, Technology, Engineering and Math (TUES) programs. He helped launch and establish the Convergence Accelerator, EDU Core Research, and the Innovation Corps (I-Corps) programs. He also supervised the Engineering Research Centers (ERC) program and has co-chaired the NSF INCLUDES Design Team from its inception.

Prior to joining NSF, Dr. Millard spent 27 years at Rensselaer Polytechnic Institute where he served as a faculty member of the Electrical, Computer, and Systems Department and directed a number of research centers; including the Center for Integrated Electronics and the Academy of Electronic Media. Dr. Millard's research interests include electronics design and manufacturing, electrical testing/evaluation methodologies, semiconductor fabrication, electronic media development, information technology, and engineering education. He is the creator of the Mobile Studio project, which enables students to perform experiments that use an oscilloscope, function generator, digital control, and some form of power supply (in a portable package) - and learn at anytime, anyplace. He holds a patent for the development of a laser-induced, plasma-based Non-Contact Electrical Pathway and has received such awards as the Best Paper Award of the Institute of Electronics and Electrical Engineers (IEEE) and the Premier Award for Excellence in Engineering Education Courseware. Dr. Millard has been voted Professor of the Year on three occasions, selected as RHA Professor of the Month and was chosen as the Eta Kappa Nu Outstanding Professor.

Keynote Speakers (cont)

Tuesday, October 15th | 12:00 - 1:45
Room: Columbia 5-12

The Robots Are Coming: Teaching Interdisciplinary and Inclusive Courses to Engineers and Beyond
R. Iris Bahar, Computer Science Department Head
Colorado School of Mines, USA

Abstract: Art, design, computing, and engineering principles are often taught in a siloed fashion. This approach leaves students with a missed opportunity to work together in interdisciplinary teams and learn valuable skills from one another. This talk will lay out my journey to design and teach more interdisciplinary and inclusive courses to engineers, computer scientists, and beyond. In one of my courses, *The Robots Are Coming! The Robots Are Coming!,* I illustrate the power of multidisciplinary study and the beauty of collaboration among students. The course had students augment existing artistic robots and design new dynamic interactive creations, allowing them to gain hands-on understanding of fundamental principles in engineering, computing, design, and collaboration and encouraging them to explore issues regarding spirit, technology, ethics, and sustainability along the way. My talk concludes with some thoughts on the future of STEM education and how courses may be made more inclusive, collaborative, and engaging.

Biography: R. Iris Bahar received B.S. and M.S. degrees in computer engineering from the University of Illinois, Urbana-Champaign, and Ph.D. degree in electrical and computer engineering from the University of Colorado, Boulder. She is a faculty member in the Computer Science Department at the Colorado School of Mines, where she currently serves at their Department Head. Before joining Mines, she was on the faculty at Brown University for 26 years and held dual appointments as Professor of Engineering and Professor of Computer Science. Her research interests focus on energy-efficient and reliable computing, from the system level to device level. Most recently this includes the design of robotics systems. She is the 2019 recipient of the Marie R. Pistilli Women in Engineering Achievement Award and the Brown University School of Engineering Award for Excellence in Teaching in Engineering, as well as the recipient of the 2022 University of Illinois ECE Distinguished Alumni Award. Iris is an IEEE fellow and an ACM Distinguished Scientist.

Keynote Speakers (cont)

Wednesday, October 16th | 12:00 - 1:30
Room: Columbia 5-12

AI for Education: The Journey is Just Getting Started
Chris Daugherty, Educational Strategy Lead
Google, USA

Abstract: Led by Chris Daugherty, Education Strategy Lead at Google, this presentation explores the transformative impact of AI on education. It will provide insights into the differences between consumer and enterprise AI, showcase approaches for leveraging this technology to achieve positive outcomes, and emphasize the need for a strategy to empower educators to harness AI's potential safely and effectively.

Biography: Chris Daugherty started off his career answering phones for a large publishing company 23 years ago. He has traversed the spectrum of technology companies focusing on education solutions, strategy and deployments. Leading the Google strategy for the Central United States, Chris is responsible for building strategic partnerships and outcomes for schools at Google Public Sector.

Technical Program: Sunday, October 13

8:00 – 16:00
Registration
Room: Terrace Foyer

9:00 - 16:00
S100: Doctoral Symposium
Room: Van Ness

9:00 - 12:00
S102: Let's Play: Improving our Teaching in the Medium of Board Games
Room: Fairchild
Organizers: Peter A Jamieson and Karen C. Davis (Miami University, USA)

9:00 - 12:00
S104: Design Signatures in the Wild: Making the Invisible Visible (The Directors Cut)
Room: Gunston
Organizers: Daria Kotys-Schwartz (University of Colorado Boulder, USA); Cynthia Atman (University of Washington, USA); Reid Bailey (University of Virginia, USA); Susannah Howe (Smith College, USA); Micah Lande (South Dakota School of Mines & Technology, USA)

9:00 - 12:00
S203: Unfolding the Layers of the Engineer of 2050 through Faculty Development and Change
Room: Cardozo
Organizers: Kristi J. Shryock and Karan Watson (Texas A&M University, USA)

13:00 - 16:00
S103: Designing Transformative Engineering Education Projects Towards National Science Foundation Funding Success
Room: Cardozo
Organizers: Olga Pierrakos (Wake Forest University, USA); Matthew Verleger (Embry-Riddle Aeronautical University, USA); Lulu Sun and Christine Delahanty (National Science Foundation, USA)

13:00 - 16:00
S201: Affect and Identity in Engineering Education: Understanding how Emotions, Feelings, and Values Shape our Students Work and Contribute to their Engineering Identity
Room: Gunston
Organizers: Jessica Swenson (University at Buffalo, USA); Emma Treadway (Trinity University, USA)

Technical Program: Sunday, October 13 (cont)

13:00 - 16:00
S202: Decolonizing What? Limits and Opportunities for Developing Equitable Syllabi in Computer Science and Engineering Education
Room: Fairchild
Organizers: Gabriel Medina-Kim (Rensselaer Polytechnic Institute, USA); Chosang Tenzin, An Huynh, Lynne Slivovsky and Jane L. Lehr (California Polytechnic State University, USA); Lizabeth Thompson (Cal Poly, San Luis Obispo, USA)

14:00 - 15:30
S399: FIE Steering Committee (Open Meeting)
Room: Embassy

15:30 - 17:00
S499: FIE Steering Committee (Closed Meeting)
Room: Embassy

Technical Program: Monday, October 14

7:00 – 18:00
Registration
Room: Terrace Foyer

7:30 - 8:00
M100: Continental Breakfast
Room: Columbia NorthWest

8:00 - 9:30
M101: AI for Faculty
Session Chair: Vijayalakshmi Ramasamy (Georgia Southern University, USA)
Room: Columbia 1

8:00
From Tweets to Trends: Tracing the Public's Perception of AI in Education Post-ChatGPT
Fan Zhang, Rui Guo, Wanli Xing, Wangda Zhu and Taehyun Kim (University of Florida, USA); Zifeng Liu (University of Florida & USA, USA)

8:15
Generative AI in Education: A Study of Educators' Awareness, Sentiments, and Influencing Factors
Aashish Ghimire and John M Edwards (Utah State University, USA); James Prather (Abilene Christian University, USA)

8:30
Implementing and Deploying Artificial Intelligence Solutions in Higher Education Institutions
Olga Patricia Vazquez-Villegas, María del Pilar García-Chitiva, Danilo Valdes Ramirez, Carmen Isabel Reyes Peraza and Carles Abarca De Haro (Tecnologico de Monterrey, Mexico); Genaro Zavala (Tecnologico de Monterrey & Universidad Andres Bello, Mexico)

8:45
WIP Research Paper - Faculty Perceptions of ChatGPT: A Survey in Engineering Education
Sara Amani, Lance L. A. White, Trinidad S Balart, Kristi J. Shryock and Karan Watson (Texas A&M University, USA)

9:00
Navigating the Dual Edges of AI in Engineering Education: Opportunities, Challenges, and Societal Readiness
Asad Azemi (University of Maryland Eastern Shore & University of Wisconsin - Platteville, USA)

9:15
Integrating AI Into Higher Education Curriculum in Developing Countries
Sevinj Iskandarova (Bridgewater College, USA); Kanan Yusif-zada (UNEC School of Business, Azerbaijan); Sevinj Mukhtarova (Azerbaijan Medical University, USA)

Technical Program: Monday, October 14 (cont)

8:00 - 9:30
M102: Competencies Development
Session Chair: Michelle Jarvie-Eggart (Michigan Tech, USA)
Room: Tenley Town

8:00
Fostering Empathetic Engineers by Practicing Contextual Listening: A Case Study
Amal Kabalan and Aditi Vijayvergia (Bucknell University, USA)

8:15
WIP: An Experiential Undergraduate Certificate in Semiconductor Engineering and Physics
Jackson Anderson, Jeff Frolik, Matt Gallagher and Randall Headrick (University of Vermont, USA)

8:30
Assessing Basic Computer Skills: A Study of Computer Science First-Year Students in Higher Education
Maria Emília Bigotte de Almeida (Higher Institute of Engineering of Coimbra, Portugal); Anabela Gomes (Polytechnic Institute of Coimbra, ISEC & CISUC, University of Coimbra, Portugal)

8:45
Building a Fairer Future: Integrating Social Justice in the Engineering Curriculum
Aparajita Jaiswal (Purdue University, West Lafayette, USA); Gaurav Nanda and Muna Sapkota (Purdue University, USA)

9:00
Work-In-Progress: A Systematic Literature Review of Exploring Threshold Concepts in Cyber-Physical Systems Education
Yunmeng Han and David Reeping (University of Cincinnati, USA)

9:15
Strategies for Improving the Communication Skills in Engineering Technology Programs
Moftah Ali (Northwestern State University of Louisiana, USA); Jafar F. Al Sharab (Northwestern State University of Louisiana, USA & STEM Pioneers, USA)

Technical Program: Monday, October 14 (cont)

8:00 - 9:30
M103: Teaming and Teamwork 1
Session Chair: Juan D. Ortega Alvarez (Virginia Tech, USA)
Room: Rock Creek

8:00
Effectiveness of Implementing Team Contracts in a Client-sponsored Project-based Learning Course
Arko Barman (Rice University, USA)

8:15
Confirmatory Evidence for a Survey of Skill and Attitude Development on Engineering Teams
Justin C Major (Rowan University, USA); Richard T Cimino (New Jersey Institute of Technology, USA)

8:30
Intercultural Readiness: Mapping Effective Teamwork Strategies in Engineering Teams to the Intercultural Development Continuum
Alankrita Chhikara (Purdue University, USA); Samantha Lapka (The Ohio State University, USA); Franki Hei Yk Kung and Brent Jesiek (Purdue University, USA)

8:45
Exploring Peer Evaluation Methods in Group Projects of Software Engineering Education
Mohammad Rizqullah Hafizh bin Mohamed Riduwan, Mark Jung Zen Peng, Jia Wei Darien Oh and Jun Hong Ng (University of Glasgow, United Kingdom (Great Britain)); Chloe Rayn Loh (University of Glasgow, Singapore); Shi Ya Ong, Qi Cao and Peter ChunYu Yau (University of Glasgow, United Kingdom (Great Britain))

9:00
WIP: ChatVis: Enhancing Academic Team Collaboration Through WhatsApp Chat Analytics
Hector G. Perez-Gonzalez (Universidad Autonoma de San Luis Potosi & Gannon University, USA); Raymundo A. González-Grimaldo (Universidad Autonoma de San Luis Potosi, Mexico); Joshua Nwokeji and Mei-Huei Tang (Gannon University, USA); Reyes Juárez-Ramírez (Universidad Autónoma de Baja California, Mexico); Davide Piovesan (Gannon Univerisity, USA); Andrew Meneely (Rochester Institute of Technology, USA); Cesar Guerra-García (Universidad Autonoma de San Luis Potosi, Mexico)

9:15
Using GitHub Analytics to Assess the Quality of Collaboration in Software Engineering Teams
Quan Minh Le, Kiet Phan, Bowen Hui and Adara Putri (University of British Columbia, Canada)

Technical Program: Monday, October 14 (cont)

8:00 - 9:30
M104: Diversity and Broadening Participation 1
Session Chair: Samieh Askarian (University of Cincinnati, USA)
Room: Shaw

8:00
(WIP) Empowering Change: Cultivating Critical Consciousness in Computer Science Education at a Hispanic-Serving Institution
Jessica Rivera (University of Texas at San Antonio, USA); Mariana Alvidrez (New Mexico State University, USA); Randy Taylor and Christopher Villa (Helix Solutions, USA)

8:15
WIP: CAHSI Allyship Program: An Asset-Based Approach to Build Computing Communities for Students Success at HSIs
Sanga Kim (The University of Texas at El Paso, USA); Shiva Darian (University of Texas at El Paso, USA); Natalia Villanueva-Rosales (University of Texas at El Paso & Cyber-ShARE Center of Excellence, USA); Nayda G. Santiago (University of Puerto Rico, Mayaguez, USA)

8:30
Social Network Structures of Engineering Students With Disabilities
Darby R Riley and Kaitlin Mallouk (Rowan University, USA)

8:45
A Quantitative Study of Publications About Underrepresented Minority Undergraduate Students in Computer Science Majors in the United States
Maristela Holanda (University of Brasilia, Brazil); Dilma Da Silva (TAMU, USA); Manuella Valadares (University of Brasilia, Brazil); Suxia Cui (Prairie View A&M University, USA)

9:00
Growing Our PEARLS and ASSETS Through a Support Ecosystem for Low-Income Academically Talented Students
Carla Lopez del Puerto (University of Puerto Rico - Mayaguez, USA); Manuel Jimenez (University of Puerto Rico at Mayaguez, Puerto Rico); Monica Alfaro (University of Puerto Rico, Puerto Rico); Carmen Bellido (University of Puerto Rico Mayaguez, Puerto Rico); Matias J Cafaro (University of Puerto Rico, Mayaguez, Puerto Rico)

9:15
Perceptions About Teaching Programming in the Neurodiverse Students' Context
Elaine Cristina Juvino de Araujo (Federal Institute of Paraiba & Federal University of Campina Grande, Brazil); Ana Liz Souto Oliveira (Federal University of Paraíba, Brazil); Wilkerson L. Andrade (Federal University of Campina Grande, Brazil)

Technical Program: Monday, October 14 (cont)

8:00 - 9:30
M106: Design in the Curriculum
Session Chair: Diana Bairaktarova (Virginia Tech, USA)
Room: Fairchild

8:00
Engaging Students in an Educational Escape Box Design Project
Amber Kemppainen and Linda Wanless (Michigan Technological University, USA)

8:15
WIP: "We Just Did That": Building Engineering Identity and Sense of Belonging through Team Accomplishment in First-Year Design Projects
Leah M Maykish, Jessica Swenson and Eunsil Lee (University at Buffalo, USA); Emma Treadway (Trinity University, USA)

8:30
How Students Develop as Critically Conscious Engineers: The Impact of an Engineering Design Course Embedded With Critical Consciousness
Renata A Revelo (University of Illinois at Chicago, USA); Julio Mendez (University of Illinois, Chicago, USA); Anastasiia Rozhkova (University of Illinois Chicago, USA)

8:45
Generative vs. Traditional Computer-Aided Design- How design tools impact CAD artifact quality
Aidan J. Hall and Molly H. Goldstein (University of Illinois at Urbana-Champaign, USA)

9:00
Whole System Mapping for Sustainable Design for Senior Engineering and Non-Engineering Students
Mehrube Mehrubeoglu (Texas A&M University-Corpus Christi, USA); Lifford McLauchlan (Texas A&M University-Kingsville, USA); Stefanie Koehler (Green Crane Innovation, USA)

9:15
Designing Dual Modeling Task Sequences to Build Functional Analysis Learning Trajectories for Engineering and Mathematical Sciences Education
Celil Ekici and Devanayagam Palaniappan (Texas A&M University - Corpus Christi, USA); Mehrube Mehrubeoglu (Texas A&M University-Corpus Christi, USA); Pablo Rangel, Jose Baca and Mallikarjunaiah Muddamallappa (Texas A&M University - Corpus Christi, USA)

Technical Program: Monday, October 14 (cont)

8:00 - 9:30
M107: Co-curricular Activities for Undergraduate
Session Chair: Chunbo Chu (Franklin University, USA)
Room: Columbia 2

8:00
Latina Engineering Students' Experiences in Work-Integrated Learning
Maartje Van den Bogaard (UTEP, USA); Diane E. Golding and Jakia Sultana (University of Texas at El Paso, USA); Tristan Hernandez (UTEP, USA); LaTasha T Starr (Texas A&M University, USA)

8:15
Belonging matters: Exploring student engagement in innovation ecosystems
Ada Leung, Sadan Kulturel-Konak and Abdullah Konak (Penn State Berks, USA)

8:30
WIP: Contributor Catalyst: A Pilot Program to Support HBCU Undergraduates Contributing to Open Source
Emily Lovell (University of California, Santa Cruz, USA); Thorna Humphries (Norfolk State University, USA); Stephanie Lieggi (University of California, Santa Cruz, USA)

8:45
Tracking Undergraduate Students' Perception of Early Exposure to Practical Computing Skills Over Time
Tyler Buxton, Margaret Ellis and Sara Hooshangi (Virginia Tech, USA)

9:00
Grid-Forming Inverter: A Review and Educational Perspective
Zeeshan Akhtar (University of Puerto Rico at Mayagüez & The University of Puerto Rico, Mayaguez, USA); Eduardo Ortiz-Rivera (University of Puerto Rico-Mayaguez, Puerto Rico); Alanis M Colon Gonzalez (University of Puerto Rico - Mayagüez, Puerto Rico)

9:15
WIP: French Experience for U.S. Students in Renewables-Based Power Systems Research
Ali Mehrizi-Sani and Chen-Ching Liu (Virginia Tech, USA); Jean-Luc Schanen (Grenoble Electrical Engineering Laboratory, France); Noredine Hadjsaid (Grenoble Institute of Technology, France)

Technical Program: Monday, October 14 (cont)

8:00 - 9:30
M108: Instructional Design
Session Chair: Sangit Sasidhar (National University of Singapore, Singapore)
Room: Embassy

8:00
WIP: An Alternative Grading Scheme in a Graduate Disciplinary Engineering Course
Susan P Gentry (University of California, Davis, USA)

8:15
WIP: Analyzing Students' Practices Behaviors in an Introductory Computer Science Course and Monitoring Their Practices Behaviors in a Subsequent Class
Marcia Moraes and James Folkestad (Colorado State University, USA)

8:30
Office Hours and Online Forum Engagement in Introductory CS Courses
Alice Wanner and Ryan Lenfant (University of Virginia, USA); Thomas Lam (Columbia University, USA); Michelle Cheng, John R. Hott and Raymond Pettit (University of Virginia, USA)

8:45
WIP: Industry 4.0 Robotics - an Interdisciplinary Approach to Deep Learning
Chad A Williams, Haoyu Wang, Stan Kurkovsky, Xiaobing Hou and Ryan Sharp (Central Connecticut State University, USA)

9:00
Using Conceptual Blending to Teach Software Design Principles to Undergraduates
Ashraf Gaffar, Mohamed Y. Selim and Oliver Eulenstein (Iowa State University, USA)

9:15
Collaborative Synergy: Enhancing Face-To-Face Computing Courses
Iryna Ashby (Purdue University, USA); Deepti Tagare (University of Texas at San Antonio, USA); Cassandra Thomas (Tuskegee University, USA); Marisa Exter (Purdue University, USA)

8:00 - 9:30
M109: Panel: A Vision for the Next 15 Years of Computing Education
Room: Columbia 3-4
Panelists: Adrienne Decker (University at Buffalo, USA); Monica M. McGill (Institute for Advancing Computing Education, USA); Briana Morrison (University of Virginia, USA); Manuel Perez-Quinones (UNC Charlotte, USA); Aman Yadav (Michigan State University, USA)

8:00 - 12:00
Education Society Executive Committee Meeting
Room: Gunston

Technical Program: Monday, October 14 (cont)

9:30 - 10:30
M200: Coffee Break
Room: Columbia NorthWest

10:30 - 12:00
M201: Attitudes and Perceptions 1
Session Chair: Michael Chai (Queen Mary University of London, UK)
Room: Columbia 1

10:30
Inviting Industry Guest Speakers to Improve Undergraduate Student Understanding of Career Options
Caymen Novak (University of Michigan Dearborn, USA); Cassandra Jamison (Rowan University, USA)

10:45
WIP: Developing Husky PAWS S-STEM Scholar Criteria
Michelle Edith Jarvie-Eggart, PE, Briana Bettin, Kathryn Hannum, Melissa Baird, Adrienne R. Minerick and Wayne Gersie (Michigan Technological University, USA)

11:00
Large-Scale Deployment and Evaluation of an Academic Integrity Module for Computing Students
Debarati Basu (Embry-Riddle Aeronautical University, USA); Harini Ramaprasad and Landon Nalewaja (University of North Carolina at Charlotte, USA)

11:15
Understanding the Computer Science Student Experience Through the Lens of System Ecology
hamzah arishi (University of Adelaide, Australia); Nickolas J Falkner (University of Adelaide & The University of Adelaide, Australia); Christoph Treude (Singapore Management University, Singapore); Thushari Attapatu (The University of Adelaide, Australia)

11:30
Innovative Ideas and Academic Realpolitik: Building Global Competence Development Into a European University Alliance
Bjorn Kjellgren (KTH Royal Institute of Technology, Sweden)

11:45
Engineering Solutions to Real Problems
Sam Devincenzi (FURG, Brazil); Eder Mateus Gonçalves (Universidade Federal do Rio Grande - FURG, Brazil); Vinicius M. Oliveira and Adriano Werhli (Federal University of Rio Grande, Brazil)

Technical Program: Monday, October 14 (cont)

10:30 - 12:00
M202: Undergraduate Education 2
Session Chair: Masood M Khan (Curtin University, Australia)
Room: Tenley Town

10:30
WIP: Object-Oriented Design Education: A Systematic Mapping Study
Hector G. Perez-Gonzalez (Universidad Autonoma de San Luis Potosi & Gannon University, USA); Reyes Juárez-Ramírez (Universidad Autónoma de Baja California, Mexico); Cesar Guerra-García (Universidad Autonoma de San Luis Potosi, Mexico); Alberto Núñez-Varela (UASLP, Mexico); Sandra Nava-Muñoz and Francisco J Torres Reyes (Universidad Autonoma de San Luis Potosi, Mexico); Francisco Martínez Pérez (Universidad Autónoma de San Luis Potosí & Facultad de Ingeniería, Mexico); Joshua Nwokeji (Gannon University, USA)

10:45
Advancing Engineering and Computing Education through the Lens of Learning Analytics
Zhaowei Zhang (University of South Florida, USA); Jie Lu (University of Georgia, USA); Bo Pei (University of South Florida, USA); Yichen Huang (University of Illinois at Urbana-Champaign, USA)

11:00
Feature Matching Comparison with Limited Computing Power Device for Autonomous Driving
XU DU and Weitian Wang (Montclair State University, USA)

11:15
WIP: How to Improve Student Comprehension of Pseudocode Reading and Writing
Anjum Chida (Rice University, USA); Ovidiu Daescu (University of Texas, Dallas, USA)

11:30
Teaching and Learning of Introduction to Software Engineering Experimentation to Distance-Learning Students: a Quasi-Experiment
Carlos D Luz, Elaine I Moreira, Nelson Tenório and Edson OliveiraJr (State University of Maringá, Brazil); Ellen Barbosa (University of São Paulo, Brazil)

11:45
Active and Constructive Learning in Computing and Engineering Face-To-Face Courses: A Case for H5P Interactive Technology
Iryna Ashby (Purdue University, USA); Cassandra Thomas (Tuskegee University, USA); Marisa Exter (Purdue University, USA)

Technical Program: Monday, October 14 (cont)

10:30 - 12:00
M203: Teaming and Teamwork 2
Session Chair: Sangit Sasidhar (National University of Singapore, Singapore)
Room: Rock Creek

10:30
Breaking Barriers and Building Confidence: Unleashing the Power of Digital Tools and Gender-Balanced Teams in Engineering Education
Matthew Barry, Linda T. DeAngelo and Cara R. Rossetti (University of Pittsburgh, USA); Sarah E. Wielgosz (University of Maryland, USA); David M. Pabst, Lorena Mezini and Lee A Dosse (University of Pittsburgh, USA)

10:45
Theme Work on Teamwork: Mapping Student Teaming Experiences in Design Projects
Krina Patel, Sara Beckman, Shang Zhu, Alexander Cui, Jacob Yim and Qiuquan Gu (University of California, Berkeley, USA)

11:00
WIP: Just-In-Time AI Assisted Formative Feedback for Written, Oral, Team-Based Assessment Tasks: What Worked, What Didn't and Why
May Lim (The University of New South Wales, Australia)

11:15
Strategies and Implications of Peer Assessment in Software Engineering Education
Joy Yee Shing Cheng (University of Glasgow, Singapore); Zi Jian Adrian Pang (University of Glasgow, United Kingdom (Great Britain)); Elias Isaac Huai-En Lim (University of Glasgow, Singapore); Sean Weng Hin Chan (University of Glasgow & Singapore Institute of Technology, Singapore); Lionel Wei Xian Sim (University of Glasgow, United Kingdom (Great Britain)); Moreno Koko (University of Glasgow, Singapore); Qi Cao and Sye Loong Keoh (University of Glasgow, United Kingdom (Great Britain))

11:30
WIP: Initial Development of a Faculty Survey Tool to Measure Instructor Attitudes About Learning and Teaming in Engineering Coursework
Campbell J McColley and Alexandra Werth (Cornell University, USA)

11:45
A Preliminary Investigation of Students as Peer Evaluators
Fazel Ranjbar (University of Cincinnati, USA); Jutshi Agarwal (University at Buffalo, SUNY, USA); Elahe Vahidi, Junqiu Wang and PK Imbrie (University of Cincinnati, USA)

Technical Program: Monday, October 14 (cont)

10:30 - 12:00
M204: Diversity and Broadening Participation 2
Session Chair: Ada Leung (Pennsylvania State University Berks, USA)
Room: Shaw

10:30
An Exploration of the Intersectional Distribution of Physical, Social, and Emotional Resources in Engineering
Narjes Khorsandi Koujel and Justin C Major (Rowan University, USA)

10:45
Driving STEM Education via Donk Racing
E Shirl Donaldson, PMP (University of Michigan Flint, USA)

11:00
A Qualitative Analysis of Institutional Inequities During COVID
Stephanie Allen (Cal Poly, SLO, USA); Lizabeth Thompson (Cal Poly, San Luis Obispo, USA)

11:15
Pre-Introductory Programming for College Students: Driving Engagement, Motivation, and Creativity to Drive Interest in Computing Studies
Andras Margitay-Becht (Saint Mary's College of California, USA); Udayan Das (Saint Mary's College of California & Illinois Institute of Technology, USA)

11:30
Guiding Empowerment Model: Liberating Neurodiversity in Online Higher Education
Hannah M Beaux, Pegah Karimi, Otilia Pop and Rob Clark (Western Governors University, USA)

11:45
The Soundtrack of Our Lives: Understanding the Experiences of Disabled Women in Engineering Programs Through Song Choice (WIP)
Rachel Figard, Jennifer Bekki and Samantha Brunhaver (Arizona State University, USA)

Technical Program: Monday, October 14 (cont)

10:30 - 12:00
M206: K-12 Education 1
Session Chair: Abdul Halim Abdullah (Universiti Teknologi, Malaysia)
Room: Fairchild

10:30
Industry's Role in Vocational Education and Training Governance and Decision Making
Anu Karilaakso (KTH Royal Institute of Technology, Sweden); Arnold N Pears (KTH Royal Institute of Technology & Uppsala University, Sweden)

10:45
Investigating the Online Math Learning Themes and Mathematical Literacy of Community Role Using Core&Periphery&Extra-Periphery Structures
Hai Li, Rui Guo and wangda zhu (University of Florida, USA); Chenglu Li (University of Utah, USA); Wanli Xing (University of Florida, USA)

11:00
Competency-Based Instructional Design for Microelectronics Training: ECOVEM Project
Felix Garcia Loro (Spanish University for Distance Education (UNED), Spain); Elio Sancristobal and Rosario Gil (Spanish University for Distance Education - UNED, Spain); Blanca Quintana (Universidad Nacional de Educación a Distancia, Spain); Pedro Plaza Merino (UNED & Plaza Robotica, Spain); Sergio Martin (Spanish University for Distance Education - UNED, Spain); Slava Malenkova Tzanova and Slavka Tzanova (Technical University of Sofia, Bulgaria); Manuel Castro (Spanish University for Distance Education - UNED, Spain)

11:15
Latinas' Perceptions of Features of an OST STEM Program That Create a Supportive STEM Learning Context: A Qualitative Case Study
Chaoyi Wang (Zhejiang Normal University, USA)

11:30
WIP: Collaborating to Introduce Second-Life Battery Technology Research in an Informal STEM Learning Environment
Hope Whiteside (The University of Alabama, USA); Joni M. Lakin (University of Alabama, USA); Dominic Combs, Shannon Davidson, Bernadette Forrest and Jaber Abu Qahouq (The University of Alabama, USA)

11:45
Empowering K-12 Students Through Open Inquiry on Open Government Data: A Data-Driven Approach in CS Education
Sayed Mohsin Reza (Pennsylvania State University Harrisburg & University of Colorado Denver, USA); Anmol Garg (Pennsylvania State University, USA); Michael A. Johnson (University of North Texas, USA); Amanda Barany (University of Pennsylvania, USA); Alex Acquah (The University of Texas at El Paso, USA); Justice T Walker (The University of Texas at El Paso & ABC Learning Lab, USA)

Technical Program: Monday, October 14 (cont)

10:30 - 12:00
M207: Undergraduate Education 1
Session Chair: Gregory Triplett (Saint Louis University, USA)
Room: Columbia 2

10:30
Empowering Undergraduate Students With Cloud Computing Skills: A Proposal for OpenStack-Centric Education
Emil Salib (James Madison University, USA)

10:45
Integration of Hardware and Software Environments to Study Wireless Sensor Networks
Ramakrishnan Sundaram (Gannon University, USA)

11:00
WIP: Using GeoGebra to Learn the Basics of Post-Quantum Cryptography
Édgar Pérez-Ramos (University de La Laguna, Spain); Pino Caballero-Gil and Héctor Reboso-Morales (University of La Laguna, Spain)

11:15
WIP: Advancing Data Quality Assurance and Privacy Protection Techniques: Bridging Theory and Practice
Amin Malekmohammadi (California State University, Bakersfield, USA); Norma Felix, Erin Viray and Alberto Cruz (California State University Bakersfield, USA)

11:30
Mathematical Theory, Computing Implementation and Digital Electronics Simulation of Kaprekar's Routine
Pierre Schott (Institut Supérieur d'Electronique de Paris & ISEP, France); Andrew Lehmann (École D'Ingénieurs Du Numérique (ISEP), France)

11:45
Unlocking Learning Potential: Generative AI Chatbots as Study Partners in Online BS in Computer Science Degree Program
Yanzhen Qu, Daniel Letort, Howard Evans, Noura Abbas, Richard Cai, Mazen Haj-Hussein, Anastasia Biggs and Janet Durgin (Colorado Technical University, USA)

Technical Program: Monday, October 14 (cont)

10:30 - 12:00
M208: Continuing Education for Workforce Development
Session Chair: Yue Chen (Queen Mary University of London, UK)
Room: Embassy

10:30
"Exploring Cultural Assets and Their Influence on Fostering a Sense of Belonging Among Women in the Middle East and North Africa (MENA) Region"
Suzan Allaham and Jennifer Bekki (Arizona State University, USA)

10:45
Fostering Transportation Workforce Development for the Blue Economy
Alberto Figueroa and Ismael Pagan Trinidad (University of Puerto Rico - Mayaguez, Puerto Rico); Carla Lopez del Puerto (University of Puerto Rico - Mayaguez, USA); Josue Dieppa and Joyce Alicea (University of Puerto Rico - Mayaguez, Puerto Rico)

11:00
Developing AI Leadership Competencies While Supporting Organization Capacity Building
Sharifa Alghowinem (MIT Media Lab, USA); Aikaterini Bagiati and Andrés Felipe Salazar-Gómez (Massachusetts Institute of Technology, USA); Cynthia Breazeal (MIT Media Lab, USA)

11:15
The MIT SUD Ventures Program: Entrepreneurship Training for Researchers in STEM and Beyond
Andrés Felipe Salazar-Gómez, Aikaterini Bagiati and Hanna Adeyema (Massachusetts Institute of Technology, USA); Carolina L. Haass-Koffler (Brown University, USA); Cynthia Breazeal (MIT Media Lab, USA)

11:30
WIP: Lifelong Learning in Electrical Engineering: Courses to Support Professional Competence Development in Electrification in Transportation- and Aviation Sectors
Jennifer Leijon and Olof Lindahl (Uppsala University, Sweden)

11:45
Digital Transformation in Adult Education: Empowering Educators to use DigComp with a MOOC
Natalia Spyropoulou and Sofia Tsitou (Hellenic Open University, Greece); Gerasimos Vonitsanos (University of Patras, Greece); Rozalia Kalantzi (Hellenic Open University, Greece); Achilles Kameas (Hellenic Open University & Computer Technology Institute, Greece)

10:30 - 12:00
M209: Panel: Bringing Humanitarian Engineering into ECE Programs through Electricity Access Education
Room: Columbia 3-4
Panelists: Pritpal Singh (Villanova University, USA), Susan Lord (University of San Diego, USA), Henry Louie (Seattle University, USA)

Technical Program: Monday, October 14 (cont)

12:00 - 13:30
M300: Lunch
Room: Columbia 5-12

12:00 - 13:30
Keynote
Engineering: Creating the World We Want
Room: Columbia 5-12
Speaker: Don L. Millard, Deputy Assistant Director of the Engineering Directorate (ENG) (U.S. National Science Foundation)

13:30 - 15:00
M501: Personal and Professional Development 1
Session Chair: Pedro Fonseca (University of Aveiro, Portugal)
Room: Columbia 1

13:30
WIP: A Preliminary Framework for Fostering Leadership Skills in Software Engineering Students
Nicolas Pereira do Nascimento (Pontifical Catholic University of Rio Grande do Sul, Brazil); Rafael Chanin (PUCRS, Brazil); Afonso Sales (PUCRS - University, Brazil)

13:45
Assessing Work-Integrated Learning Program Students' Sources of Career Development: A Validation Study
Adrian Nat Gentry, Kerrie A. Douglas and Eric A. Holloway (Purdue University, USA)

14:00
Effects of an Instructor-Provided Study Plan on Students' Exam Preparation
Divya Bhargava (Texas A&M University, USA)

14:15
The Role of Authentic Assessments in Multi-Disciplinary Design and Build Modules for Enhancing Student Employability
Yasir Alfadhl, Kok Keong Chai and Yue Chen (Queen Mary University of London, United Kingdom (Great Britain)); Matthew Tang (University of Cambridge, United Kingdom (Great Britain))

14:30
Meta-Analysis of Student-Researchers' Learning Journeys Through a Reflective Practice
Vaani Bhatnagar, Adhishri Hande, Prisha Bhatia, Meagan Martin, Dan Khoi Nguyen, Manuel De Tezanos Pinto and Yevgeniya V Zastavker (Olin College of Engineering, USA)

14:45
Development of Construction Engineering Students' Professional Identities: An Investigation of Professional Identity Practices Through Storytelling
Mariam A Tomori I and Omobolanle Ogunseiju (Georgia Institute of Technology, USA)

Technical Program: Monday, October 14 (cont)

13:30 - 15:00
M502: Undergraduate Education 3
Session Chair: Edward Dillon (University of Maryland, USA)
Room: Tenley Town

13:30
Experiential and Expression-Based Accessibility Awareness Interventions to Improve Computing Education
Yang Liu, Domenic Mangano, Krishna Neupane and Samuel A Malachowsky (Rochester Institute of Technology, USA); Daniel Krutz (Rochester Institute Of Technology, USA)

13:45
RustLIVE: Reducing the Learning Barriers of Rust Through Visualization
Diane Stephens (University of Georgia, USA)

14:00
A Systematic Literature Review of Neurodiversity in Engineering Higher Education
Elahe Vahidi, Elizabeth Meintel, Mark Onyango and Whitney Gaskins (University of Cincinnati, USA)

14:15
Socially Aware Design Workshop to Discover Socio-Technical Requirements: Planning, Execution, and Results
Eduarda de Almeida (Universidade Federal Do Paraná, Brazil); Flavia Belintani Haddad (Universidade Tecnológica Federal Do Paraná, Brazil); Alexandre L'Erario (Universidade Tecnológica Federal do Paraná, Brazil); Letícia Peres (Federal University of Paraná, Brazil); Cleber Gimenez (Universidade Tecnológica Federal Do Paraná, Brazil)

14:30
WIP: An Engaging Undergraduate Intro to Model Checking in Software Engineering Using TLA+
Konstantin Läufer (Loyola University, Chicago, USA); Gunda Mertin (University of Lübeck, Germany); George K. Thiruvathukal (Loyola University, Chicago, USA)

14:45
ChatGPT, Finances, and Degree Attainment: Increasing Generative Artificial Intelligence (AI) Utilization and Implications for Students' Decision-Making
Trina Fletcher (Florida International University, USA)

Technical Program: Monday, October 14 (cont)

13:30 - 15:00
M503: Curriculum & Course Development for Graduate Students
Session Chair: Masood M Khan (Curtin University, Australia)
Room: Rock Creek

13:30
Forging New Paths in Cybersecurity Doctoral Research With Open Datasets and Synthetic Data Generation
Michelle Liu, Nathan Green, Diane Murphy and Donna M. Schaeffer (Marymount University, USA)

13:45
New Course Development for 5G Connectivity: Lessons Learned in Matlab Simulations
Dragorad Milovanovic (University of Belgrade, Serbia); Tulsi Pawan Fowdur (University of Mauritius, Mauritius); Vladan Pantovic (University Union - Nikola Tesla, Serbia)

14:00
WIP: Understanding the Diverse User Groups Around Tutorials in the Interdisciplinary Learning Environment
Hannah Kim, Sergei L. Kosakovsky Pond and Stephen MacNeil (Temple University, USA)

14:15
A New Graduate Course Structure for Addressing Human Errors in Software Development
Fuqun Huang (Western Washington University, USA)

14:30
Integrating Green Computing Competencies Into Southern African Curricula
Vuyelwa David Ruwodo (University of Turku, Finland); Lannie Uwu-khaeb (University of Turku, Namibia); George Mufungulwa (The Copperbelt University, Zambia); Nikodemus Angula (Namibia University of Science and Technology, Namibia); Sibonile Moyo (National University of Science and Technology, Zimbabwe); Erkki Sutinen (University of Turku, Finland)

14:45
Exploring Organizational Strategies in Environmental Engineering Graduate Education: A Comparative Analysis of the Georgia Institute of Technology and the University of Georgia
Chan Lu (University of Georgia & USA, USA); Gengyang Li and Jian Wu (University of Georgia, USA)

Technical Program: Monday, October 14 (cont)

13:30 - 15:00
M504: Diversity and Broadening Participation 3
Session Chair: Ashok Ramasubramanian (Union College, USA)
Room: Shaw

13:30
Broadening Participation in Online Research and Learning in Materials Science and Engineering: The Impact of Recruitment Strategies
Serafina France Tribe (Northwestern University, USA); Jessica G Sandland (MIT, USA); Cecile Chazot (Northwestern University, USA)

13:45
A Two-Generation Model to Support STEM Education in Hispanic-Serving Institutions
Biao Jiang, Sarah L. Hoiland, Junghang Lee and Norberto Valdes-Portela (Hostos Community College, USA)

14:00
Mentorship and Legitimate Peripheral Participation in the Research Laboratory
Glen Hordemann (Texas A&M University & Texas A&M Embodied Interaction Lab, USA); Francis Quek (Texas A&M University, USA)

14:15
Building a Cryptography Rotation Pipeline Intervention for Cyber Athletes: Athlete Learning and Curriculum Design
Suzanna Schmeelk (St. John's University, USA); Thomas McGuire (Johns Hopkins University, USA)

14:30
Engineering Disciplines of Undergraduates and Gender Comparison of Creative Self-Efficacy, Mindset, and Perceptions
Christine Delahanty (National Science Foundation, USA)

14:45
Closing the Achievement Gap Through Industry Career Mentoring in Science and Engineering Education
Gregory Triplett, Jr (Saint Louis University, USA); Emily Barrett (Mentoring Collective, USA); Scott Sell and Amy Preis (Saint Louis University, USA)

Technical Program: Monday, October 14 (cont)

13:30 - 15:00
M505: Well-being for Graduate Students
Session Chair: Venu Dasigi (Bowling Green State University, USA)
Room: Gunston

13:30
Neural Pathways to Attention Enhancement: EEG Spectral Ratio Analysis of CM-II Meditation's Effect on Student Attention
Sreekanth Gopi and Nasrin Dehbozorgi (Kennesaw State University, USA)

13:45
WIP: Characterizing the Impact of Perfectionism on MS Game Development Students
Kyle C. James, Erika S. Mesh and David Simkins (Rochester Institute of Technology, USA)

14:00
Learning About Academia Through Scrum: A Ph.D.'s Perspective
Sarah A Reynolds, Omar Ochoa, Massood Towhidnejad, James Pembridge and Radu F. Babiceanu (Embry-Riddle Aeronautical University, USA)

14:15
AI-Powered Strategies for Alleviating Graduate Student Burnout Through Emotional Intelligence and Wearable Technology
Yuexin Liu, Amir Tofighi Zavareh and Ben Zoghi (Texas A&M University, USA)

14:30
WIP: Improving Digital Course Catalogues for an Enhanced Mobility in the Erasmus Higher Education Context
Manuel Caeiro-Rodríguez and Adrián Lugilde-López (University of Vigo, Spain); Fernando Mikic-Fonte (Universidad de Vigo, Spain); Martín Liz-Domínguez (University of Santiago de Compostela, Spain); Martín Llamas-Nistal (Atlanttic - University of Vigo, Spain)

14:45
WIP: East Asia computer science students' experiences studying in Europe
Hsiao-Yuan Hung (National Taiwan Normal University, Taiwan); Hong Wang, Mats Daniels and Anna Eckerdal (Uppsala University, Sweden)

Technical Program: Monday, October 14 (cont)

13:30 - 15:00
M506: K-12 Education 2
Session Chair: Carlos Landaverde Alvarado (The University of Texas at Austin, USA)
Room: Fairchild

13:30

The Phases of Robot Design: Storytelling Lesson for Students and a Survey Tool for Scientists
Ivana Storjak (University of Zagreb, Croatia); Petra Karabin (Primary School Dragutin Domjanic); Ana Sović (University of Zagreb, Faculty of Electrical Engineering and Computing, Croatia)

13:45

Engineering, Art, and Education: Designing Practical Robots in an Engineering Course
Eric Bredder (University of Virginia, USA); Kim Wilkens (University of Virginia, Colombia); Cody Gonzalez and Justin Boyd (University of Texas, San Antonio, USA); Camilo Vieira (Universidad del Norte, Colombia)

14:00

How Digital Games are Engaging Our Children Toward STEM Careers?
Priscila Lima (Federal University of Goias, Brazil); Laira das Almas Silva (University of São Paulo, Brazil); Anarosa A. F. Brandão (Universidade de São Paulo & Escola Politécnica, Brazil); Rodrigo Otavio Ribeiro Hagstrom and Leônidas O Brandão (University of São Paulo, Brazil)

14:15

Leveraging Learning Analytics to Explore Elementary Students Collaboration and Affect in Engineering Design Challenges
Corey Schimpf (University at Buffalo, USA & Finger Lakes Trail Conference, USA); Jutshi Agarwal (University at Buffalo, SUNY, USA); Nischal Sunar (University at Buffalo, USA); Linda Smith and Amanda Thompson (Explore Interactive, USA); S. Askari Mehdi (University at Buffalo, USA)

14:30

Construction of a Common Errors Database in Mathematics for Intelligent Tutoring System Development
Eduardo Aranha (Federal University of Rio Grande do Norte (UFRN), Brazil); Alan Santana (Federal University of Rio Grande do Norte, Brazil); Thiago Reis da Silva (Federal Institute of Education, Science and Technology of Maranhão - IFMA, Brazil); Nataly Lima Marinho and Brenda dos Santos (Federal Universisty of Rio Grande Do Norte, Brazil)

14:45

Analyzing the Ability of an ITS to Identify Causes of Errors Through Step-By-Step Mutation: Quasi-Experiment
Alan Santana (Federal University of Rio Grande do Norte, Brazil); Eduardo Aranha (Federal University of Rio Grande do Norte (UFRN), Brazil); Thiago Reis da Silva (Federal Institute of Education, Science and Technology of Maranhão - IFMA, Brazil)

Technical Program: Monday, October 14 (cont)

13:30 - 15:00
M507: Industry Involvement and Sponsorship
Session Chair: Amalia Rusu (Fairfield University, USA)
Room: Columbia 2

13:30
The Financial Benefit of Workforce Development Projects in Engineering: A Finance-Based Analysis Using Return on Investment (ROI) and Key Performance Indices as Metrics for Evaluation
Thomas L McKinley (Purdue University - West Lafayette, USA); Kerrie A. Douglas and Peter Bermel (Purdue University, USA)

13:45
Multiyear Collaboration Between the US Army and an ECE Program to Develop Student Skills in Cybersecurity of Cyber-Physical Systems
Virgilio Gonzalez (University of Texas at El Paso, USA); Oscar A Perez (DEVCOM Analysis Center, USA); Rodrigo Romero (University of Texas at El Paso, USA); Pilar Gonzalez (The University of Texas at El Paso, USA); Hector Erives-Contreras (University of Texas at El Paso, USA)

14:00
Comparison of the Effectiveness of Company-sponsored versus Student-selected Project-based Learning in Online Database Classes
Qiong Cheng and Harini Ramaprasad (University of North Carolina at Charlotte, USA); Edward Fleming (Wall Street Options, USA); Sharad Swaminathan and Rahul Das (University of North Carolina at Charlotte, USA)

14:15
WIP: Perceptions of Use and Requirements for Digital Competencies of Engineers According to Employers in Central Mexico
Noemi Mendoza (Texas A&M, USA); Martha Patricia Robles Gutiérrez (Universidad Politécnica de Pachuca, Mexico); Lourdes E Del Razo Robles (UnadMexico, Mexico); Ana Maria Jimenez Romero (CONALEP, Mexico)

14:30
Enhancing User Story Generation in Agile Software Development Through OpenAI and Prompt Engineering
Vijayalakshmi Ramasamy (Georgia Southern University, USA); Suganya Ramamoorthy (VIT Chennai, India); Gursimran Singh Walia (Augusta University, USA); Eli Kulpinski and Aaron Antreassian (University of Wisconsin-Parkside, USA)

14:45
WIP: A Systematic Approach to Screen and Align Service-Learning Projects for Optimal Student Outcomes
Chad A Williams and Stan Kurkovsky (Central Connecticut State University, USA); Mikey Goldweber (Denison University, USA); Nathan Sommer (Xavier Univerity, USA)

Technical Program: Monday, October 14 (cont)

13:30 - 15:00
M508: Assessment for Undergraduate Students 1
Session Chair: Masood M Khan (Curtin University, Australia)
Room: Embassy

13:30
Work-In-Progress: Creating and Validating the Conceptual Assessment for Sedimentology Courses
Anna Stepanova, Saira Anwar, Juan C. Laya and Carlos A. Alvarez Zarikian (Texas A&M University, USA); Tracy Hammond (Texas A and M University, USA)

13:45
WIP: Engineering Persistence: A Support System for Students in Financial Need to Succeed
Abagael Riley (Rowan University, USA); Juan M Cruz (Rowan University, USA & Unive, Colombia); Kaitlin Mallouk (Rowan University, USA)

14:00
GA2Graph: A Data-Driven Approach to Visualizing and Analyzing Collaborative Learning
Abdussalam Alawini (University of Illinois at Urbana-Champaign, USA); Isa Hajara-Yasmin and Jiabao Xu (University of Illinois Urbana-Champaign, USA); Yutong Zhang (Stanford University, USA); Zhijun Zhao (University of Illinois Urbana-Champaign, USA)

14:15
An Approach to Spaced Repetition Methodology for Teaching Markup and Scripting Programming Languages
Afonso S Jacinto (Federal Institute of Paraiba, Brazil); Francisco Petronio Alencar de Medeiros (Federal Institute of Paraiba & IFPB, Brazil); Matheus P Sousa (Federal Institute of Paraiba, Brazil)

14:30
(WIP) SABERR, A Structured Error-Based Assessment in AI Education
Mariana Alvidrez, Christabel Wayllace and Ruth C Torres Castillo (New Mexico State University, USA)

14:45
Optimizing SQL Learning: Identifying Prime Study Times Using Time-Data Analysis
Sophia Yang (University of Illinois at Urbana-Champaign, USA); Colin Li (University of Illinois Urbana-Champaign, USA); Abdussalam Alawini (University of Illinois at Urbana-Champaign, USA)

13:30 - 15:00
M509: Panel: Preparing a Competitive Nomination for IEEE and ASEE Fellow and other Competitive Awards
Room: Columbia 3-4
Panelists: Laura J. Bottomley (North Carolina State University, USA); Cynthia J Finelli (University of Michigan, USA); Cynthia Furse (University of Utah & LiveWire Innovation, LLC, USA); Michael C. Loui (Purdue University, USA); Anthony A Maciejewski (Colorado State University, USA); Barbara Oakley (Oakland University, USA); Bruce C. Wheeler (University of California, San Diego, USA)

Technical Program: Monday, October 14 (cont)

15:00 - 15:30
M600: Coffee Break
Room: Columbia NorthWest

15:30 - 17:00
M601: Ethics 1
Session Chair: Campbell R Bego (University of Louisville, USA)
Room: Columbia 1

15:30
Investigating an Automatic Assistant in Computer Ethics Education
Jixiang Fan, Morva Saaty and Dan Dunlap (Virginia Polytechnic Institute and State University, USA); Scott McCrickard (Virginia Tech, USA)

15:45
WIP: An Instrument to Assess Students' Perceptions About Sociotechnical Issues in Engineering
Cynthia J Finelli (University of Michigan, USA); Susan M. Lord (University of San Diego, USA)

16:00
WIP: Generative AI as an Instructional Resource in a Computer Science Ethics Course
Scott Barlowe, Daniel Aoulou and Alex Ponce Castillo (Western Carolina University, USA)

16:15
Values in Education: Exploration of Artificial Intelligence Ethics Syllabi Using Natural Language Processing Analyses
Kerrie Hooper and Stephanie J. Lunn (Florida International University, USA)

16:30
WIP: Identifying Technology Social Ventures for Research on Technology-Based Social Entrepreneurship Education for Engineering Students
Dayoung Kim and Bailey K McOwen (Virginia Tech, USA)

Technical Program: Monday, October 14 (cont)

15:30 - 17:00
M602: Undergraduate Education 4
Session Chair: Jo Crandall (University of Michigan, USA)
Room: Tenley Town

15:30
WIP: Updating CS1 to a 21st-Century Model of Computing
David P. Bunde (Knox College, USA); April R Crockett and Gerald Gannod (Tennessee Technological University, USA); Jaime Spacco (Knox College, USA); Neena Thota (University of Massachusetts Amherst, USA & UpCERG, Uppsala University, Sweden); Charles Weems (University of Mass, USA)

15:45
Notional Machines for Inclusive Learning
David Wilson, Saquib Sarwar and Nadia Najjar (University of North Carolina at Charlotte, USA)

16:00
Favoring Collaborative Learning in PBL: An Automated Solution for Semantic Group Formation
Ricardo E Santana, Simone C. dos Santos and Davi Mendes Maia (Federal University of Pernambuco, Brazil)

16:15
Analysis of Software Vulnerabilities Introduced in Programming Submissions Across Curriculum at Two Higher Education Institutions
Andrew L Sanders and Gursimran Singh Walia (Augusta University, USA); Andrew Allen (Georgia Southern University, USA)

16:30
Enhancing CS Education With LAs Using AI-Empowered AIELA Program
Vijayalakshmi Ramasamy (Georgia Southern University, USA); Eli Kulpinski, Thomas Beaupre, Aaron Antreassian and Yunhwan Jeong (University of Wisconsin-Parkside, USA); Peter J. Clarke (Florida International University, USA); Anthony Aiello and Charles Ray (University of Wisconsin-Parkside, USA)

16:45
Revealing the Hidden Curriculum: Analyzing Emotional Responses Using Advanced Computational Sentiment Analysis Techniques
Edwin Marte Zorrilla, Idalis Villanueva Alarcón, Gadhaun Aslam, Jinnie Shin and Amie Baisley (University of Florida, USA)

Technical Program: Monday, October 14 (cont)

15:30 - 17:00
M603: Attitudes and Perceptions of Graduate Students
Session Chair: Olanrewaju Paul Olaogun (Merrimack College, USA)
Room: Rock Creek

15:30
From Passive to Passionate: Using Genuine Projects to Motivate Students
Michael P McGarry (University of Texas at El Paso, USA); Patrick Seeling (Central Michigan University, USA)

15:45
How Satisfaction with Advisor Relationship Interacts and Evolves in Engineering Doctoral Students Questioning Whether to Leave the PhD
Catherine Berdanier (Pennsylvania State University, USA)

16:00
WIP: Advisor Shifts in Engineering Doctoral Journeys - Perceptions From International Students
Himani Sharma (Arizona State University, USA); Ann McKenna (University of Iowa, USA)

16:15
Engineering Doctoral Students' Not Sure Item Nonresponse Rates on the Departmental Climate Survey
So Yoon Yoon (University of Cincinnati, USA); Nicole Else Quest (University of North Carolina, USA); Joseph Roy (American Society for Engineering Education, USA)

16:30
Assessment Discourses in a Landscape of Emerging Technologies
Ida Naimi-Akbar (KTH Royal Institute of Technology, Sweden)

16:45
A Statistical Study of Female Students in a Software Engineering Class: Preparedness, Performance, and Contribution
Jialin Cui (North Carolina State University, USA); Runqiu Zhang (University of Virginia, USA); Qinjin Jia, Fangtong Zhou, Ruochi Li and Edward F. Gehringer (North Carolina State University, USA)

Technical Program: Monday, October 14 (cont)

15:30 - 17:00
M604: Diversity and Broadening Participation 4
Session Chair: Pali Singh (Villanova University, USA)
Room: Shaw

15:30
A Mixed-Method Study of International Students' Career Support Networks: Barriers and Opportunities
Kelsey Patton (Purdue University, USA); Siqing Wei (University of Cincinnati, USA); Seungyoon Lee and Subulola Jiboye (Purdue University, USA)

15:45
WIP: Comparison of Neurodivergent Student Prevalence in Engineering Across Two Institutions
Azadeh Bolhari and Angela Bielefeldt (University of Colorado Boulder, USA); Shellee Dyer (Weber State University, USA)

16:00
WIP - the Appeal of Computing for Social Good to Underrepresented Student Groups
Lori Postner (Nassau Community College, USA); Heidi Ellis (Western New England University, USA); Gregory W Hislop and Wesley Shumar (Drexel University, USA)

16:15
Landscape of Student Parents Studying Engineering
Julie M. Smith (Institute for Advancing Computing Education, USA)

16:30
Using Vignettes to Categorize Behaviors that Students Associate with Dispositions
Mihaela Sabin (University of New Hampshire, USA); Renée McCauley (College of Charleston, USA); Bonnie MacKellar (St. John's University, USA); Amruth N. Kumar (Ramapo College of New Jersey, USA)

16:45
It's Just a Lack of Empathy, Which is Just Honestly Exhausting Engineering Student Experiences With Ableism
Emily Landgren and Maura Borrego (University of Texas at Austin, USA)

Technical Program: Monday, October 14 (cont)

15:30 - 17:00
M605: AI/ML Learning Tools in CS
Session Chair: Jeffrey J. Yackley (University of Michigan – Flint. USA)
Room: Gunston

15:30
Using Chat-GPT to Create Multiple Choice CS Exams
Karol Lejmbach (Marquette University, USA); Sean Mackay (University at Buffalo, USA)

15:45
A critical examination of Machine Learning as a tool to predict performance of students in CS1
Kristina von Hausswolff (Mälardalens University, Sweden); Christina Björkman and Gordana Dodig-Crnkovic (Mälardalen University, Sweden)

16:00
Applying Machine Learning Techniques on Self-Reported Engagement and Student Log Data to Predict CS Learning Performance
Sultanah Abdullah A Abdullah A Albakri (University of Glasgow, United Kingdom (Great Britain) & University of Hail, United Kingdom (Great Britain)); Mireilla Bikanga Ada and Alistair Morrison (University of Glasgow, United Kingdom (Great Britain))

16:15
Exploring the Potential of Locally R un Large Language (AI) Models f or Automated Grading in Introductory Computer Science Courses
Samuel B Mazzone, Jack R Forden and Dennis Brylow (Marquette University, USA)

16:30
WIP: Investigating the Use of AI Chatbots by Undergraduate Computer Science Students
Peter Ilic (University of Aizu, Japan)

16:45
WIP: Unflipping the Classroom: Analyzing the Consequences of Toning Down Blended Learning
Martín Liz-Domínguez (University of Santiago de Compostela, Spain); Manuel Caeiro-Rodríguez (University of Vigo, Spain); Martín Llamas-Nistal (Atlanttic - University of Vigo, Spain); Fernando Mikic-Fonte (Universidad de Vigo, Spain)

Technical Program: Monday, October 14 (cont)

15:30 - 17:00
M606: K-12 Pedagogical Approach
Session Chair: Deborah Moyaki (University of Georgia, USA)
Room: Fairchild

15:30
Visualizing the Conceptual Framework of Object Orientation for Novice Programmers
Jakob Thorsen Staugaard (IT University of Copenhagen, Denmark); Jens Bennedsen (Aarhus Universitet, Denmark); Sebastian Mateos Nicolajsen (IT University of Copenhagen, Denmark); Mathias Fink (IT-University of Copenhagen, Denmark); Claus Brabrand (IT University of Copenhagen, Denmark)

15:45
Applying Project-Based Learning to Awaken New Talents: An Experience With a Prototype Essential Oil Extractor
Efraim Menezes de Lima Costa, Elias Carneiro Pinheiro, Rodolfo Nascimento de Oliveira, Ivanilson Coutinho Marinho and Ana Graziela Gomes Travassos (Instituto Federal de Educação, Ciência e Tecnologia Do Amazonas, Brazil); Juliana Mesquita Vidal Martínez de Lucena (Instituto Federal Do Amazonas, Brazil)

16:00
WIP: Educational Robotics Through Interdisciplinary Project-Based Learning in the Training of Teachers and Students in Professional and Technological Education
Vitor Bremgartner and Jeanne Moreira de Sousa, Profa. (Federal Institute of Amazonas, Brazil); Julieuza Natividade (Federal Instutute of Amazonas, Brazil); Ayrton Araújo, Hugo Velozo, Pedro Figueiredo, Alan Costa, Ana Bremgartner, Maria Aparicio and Teresa Bremgartner (Federal Institute of Amazonas, Brazil)

16:15
Let the Designing Begin! Teacher Tendencies Supporting Efficient Facilitation of the Engineering Design Process
Jessica Gale, Abeera P. Rehmat, Dyanne Baptiste Porter, Meltem Alemdar, Jasmine Choi and Sunni Newton (Georgia Institute of Technology, USA)

16:30
Learning Programming With VEX Robotics: Influence on Student Motivation in International Secondary School From Teachers' Perspective
Iek-Chong Choi (City University of Macau, Macao); Wan-Chong Choi (Macao Polytechnic University, Macao & CISUC, University of Coimbra, Portugal); Biyun Huang (City University of Macau, Macao); António José Mendes (University of Coimbra & Dep. of Informatics Engineering, CISUC, Portugal)

16:45
WIP: Virtual Physics Laboratory Applied to the Study of the Propagation of Electromagnetic Waves
Izac Silva and Vitor Bremgartner (Federal Institute of Amazonas, Brazil); Mariza Cavalcante (Federal University of Amazonas, Brazil); Yasmin Marinho, Tarsila Dourado, Amanda Vieira and Juliana Duarte (IFAM, Brazil)

Technical Program: Monday, October 14 (cont)

15:30 - 17:00
M607: K-12 AI & Machine Learning 1
Session Chair: Susmita Haldar (Fanshawe College and Western University, Canada)
Room: Columbia 2

15:30
LLM-enhanced Learning Environments for CS: Exploring Data Structures and Algorithms with Gurukul
Ashwin Rachha (Virginia Tech, USA); Mohammed Seyam (Virginia Tech, USA)

15:45
Towards the Use of Generative AI in Education
Paulo C. R. Pinho and Tiago Thompsen Primo (Universidade Federal de Pelotas, Brazil); F. Mota (Universidade Federal do Rio Grande, Brazil); Derlain M Lemos (Universidade Federal do Rio Grande - FURG, Brazil); Renan Zafalon da Silva (Universidade Federal de Pelotas & IFSul, Brazil)

16:00
Interest and Feasibility of a Bi-Directional Skill-Based Mentoring Program on Data Science and Communication Skills for Ed.D. Students and Engineering Students
Laura M Cruz Castro (University of Florida, USA); Jenny Quintana-Cifuentes and Sandy Watson (University of Louisiana Monroe, USA)

16:15
Exploring the Possibilities of Artificial Intelligence in Special Education: A Bibliometric Analysis to Support Educators and Students With Autism Spectrum Disorder (ASD)
Patrícia W de Alvarenga (FURG, Brazil); Lisiane Corrêa Gomes Silveira (Instituto Federal de Educação, Ciência e Tecnologia Sul-Rio-Grandense, Brazil); Luis Otoni Ribeiro (Universidade Federal do Rio Grande - FURG, Brazil); Rosa Vicari (Universidade Federal do Rio Grande do Sul, Brazil); Regina Barwaldt (Federal University of Rio Grande (FURG), Brazil & Center of Computational Sciences (C3), Brazil); Eder Mateus Gonçalves (Universidade Federal do Rio Grande - FURG, Brazil)

16:30
Leveraging Artificial Intelligence (AI) to Enhance K-12 Computer Science (CS) Classroom Instruction
HyeonJin Yoon (University of Nebraska-Lincoln, USA); Xin Zhong (University of Nebraska at Omaha, USA); Agnibh Dasgupta (University of Nebraska Omaha, USA); Gwen Nugent (University of Nebraska - Lincoln, USA); Guy Trainin (University of Nebraska-Lincoln, USA)

16:45
WIP: Do you concentrate? A new computational tool for measuring students' concentration
Wenjia Tan, Junhao Zhang, Yang Gao and Chingwei Lee (Tsinghua University, China); Hui Lin, Lei Shen and Yitao Duan (NetEase Youdao, China); Stella Christie (Tsinghua University, China)

Technical Program: Monday, October 14 (cont)

15:30 - 17:00
M608: First Year Engineering Education 1
Session Chair: Diana Bairaktarova (Virginia Tech, USA)
Room: Embassy

15:30
Explore Before Explain: A Quantum Leap in Student Engagement in First-Year Engineering Classes
Brett Hamlin, Gabriel Draughon, Matthew Barron, James Bittner, A J Hamlin, Amber Kemppainen, Ken Thiemann, Mary Raber, Michelle Edith Jarvie-Eggart, PE and Linda Wanless (Michigan Technological University, USA)

15:45
Understanding the Classroom Climate in a First-Year Engineering Course With Peer Mentoring
Amber Kemppainen and A J Hamlin (Michigan Technological University, USA)

16:00
Philosophy and Engineering - Communication in Brave New World
Melany M Ciampi (World Organization on System Engineering and Information Technology (WCSEIT) & President, Portugal); Claudio R Brito (Science and Education Research Organization, Portugal)

16:15
WIP: Towards a Sustainability Practice and Ethos in a First-Year, Engineering Design Experience
Georgia D. Van de Zande (Olin College of Engineering, USA); Benjamin Linder (F. W. Olin College of Engineering, USA); Yevgeniya V Zastavker (Olin College of Engineering, USA)

16:30
WIP: Microelectronic Integration in First Year Engineering Education Curriculum for SCALE
Artre Turner, Ben Arie Tanay, Kerrie A. Douglas, Melissa A Dyehouse and Jason W Morphew (Purdue University, USA)

16:45
First-Year Students' Experiences With and Development as Engineers Through a Peer-Mentoring Program
Ashish Agrawal, Michael G Eastman and Melissa E Aponte (Rochester Institute of Technology, USA)

15:30 - 17:00
M609: Student Panel: Exploring Mental Health and its Relationship with Engineering Culture
Room: Columbia 3-4
Panelists: Sowmya Panuganti, Alice Pawley and Justin L Hess (Purdue University, USA); Isil Anakok (Virginia Tech, USA)

Technical Program: Monday, October 14 (cont)

17:00 - 18:30
M701: Ethics 2
Session Chair: Tajmilur Rahman (Gannon University, USA)
Room: Columbia 1

17:00
WIP: Exploring Electricity Access Education
Susan M. Lord (University of San Diego, USA); Pritpal Singh (Villanova University, USA); Henry Louie (Seattle University, USA)

17:15
WIP: Pledging to Be an Ethical Computing Professional
Venu G Dasigi (Bowling Green State University, USA); John K. Estell (Ohio Northern University, USA); Ken Christensen (University of South Florida, USA)

17:30
WIP: Using Stories From Traditional Culture to Teach Virtue-Based Engineering Ethics
Jiamin Zhang, Neha Gutlapalli, Olivier Truong and Bryan Sutjipto (University of California, Riverside, USA); Hsin-Ling Hsieh (Northern Michigan University, USA); Dena K Plemmons (University of California, Riverside, USA)

17:45
WIP: Exploring the Nexus of Ethics and Empathy in Higher Education: Analysis of Faculty and Student Perspectives
Diana Bairaktarova (Virginia Tech, USA); Ines Direito (University of Aveiro, Portugal & University College London, United Kingdom (Great Britain))

18:00
Implementation Strategy for Infusing Engineering-Specific Ethics Into the Mechanical Engineering Curriculum
Shadi Balawi, Ravi Shanker Thyagarajan, Matilda W McVay, Lesley M Wright and Joanna N Tsenn (Texas A&M University, USA)

18:15
Encounters With Engineering Ethics: A Sample of Early Career Case Studies
Brent Jesiek, Lazlo K. Stepback and Emelina Aubeneau (Purdue University, USA); Yna Marie Pedres Leonardo and Stephanie A. Claussen (San Francisco State University, USA); Carla B. Zoltowski (Purdue University, USA)

Technical Program: Monday, October 14 (cont)

17:00 - 18:30
M702: Undergraduate Education 5
Session Chair: Sana Algaraibeh (New Mexico Institute of Mining and Technology, USA)
Room: Tenley Town

17:00
Understanding Development of Social Games Through Diary Studies
Derek Haqq (Virginia Tech, USA); Jixiang Fan, Morva Saaty and Wei Lu Wang (Virginia Polytechnic Institute and State University, USA); Natalie Andrus and Scott McCrickard (Virginia Tech, USA)

17:15
WIP: ECOCredGT Implementing Digital Credentials in Continuous Training for the Labour Market
Hector R. Amado-Salvatierra (Universidad Galileo, Guatemala); Miguel Morales Chan and Rocael Hernandez-Rizzardini (Galileo University, Guatemala)

17:30
Validity and Reliability Considerations for Undergraduate Engineering Education Research Studies Involving Salivary Biomarkers
Isabella Victoria and Idalis Villanueva Alarcón (University of Florida, USA)

17:45
WIP: Python for Everyone as a Mathematics GE Course: Broaden Participation and Enhance Data Science Career Pipeline
Wendy Lee and Melody Moh (San Jose State University, USA); Rula Khayrallah (SJSU, USA); Nada Attar and Kathy Lam (San Jose State University, USA)

18:00
An Exploratory Study on Post-Secondary STEM Mentorship within Student Organizations
Kassandra Fernandez and Nancy Ruzycki (University of Florida, USA)

18:15
Empowering Tomorrow's Information Technology Professionals: Bridging Competencies and Personalized Learning Through "Topics in Tech"
Mark Frydenberg and Liz Paushter (Bentley University, USA)

Technical Program: Monday, October 14 (cont)

17:00 - 18:30
M703: Workforce Development
Session Chair: Gloria Kim (University of Florida, USA)
Room: Rock Creek

17:00
Women's Experiences in Latin American Engineering Contexts: A Systematized Literature Review
Martha L Cano Morales (Rowan University, USA & Pontificia Universidad Javeriana, Colombia); Justin C Major (Rowan University, USA)

17:15
Exploring AI Bots as Simulators in Human Subject Research: A Novel Approach to Ethical and Efficient Experimentation in Engineering Education Research
Johannes Strobel (University of Texas at El Paso & Institute for P-12 Engineering Research and Learning, USA); Mara Medina and Emmanuel Sepulveda Guzman (University of Texas at El Paso, USA); Maartje Van den Bogaard (UTEP, USA)

17:30
WIP: Making Implicit Knowledge Explicit: A Data-Driven Approach to Improve Knowledge Transfer in a Glassblowing Beginners Class
Alexandre Armengol-Urpi and Andrés Felipe Salazar-Gómez (Massachusetts Institute of Technology, USA); Sanjay Sarma (MIT Auto-ID Center, USA)

17:45
Contributes to a Baseline for Interdisciplinarity supported on Engineers' Views on AI
Rosa Maria Vasconcelos (Minho University, Portugal); Paula Urze (UNL, Portugal); Emilia Araujo (Minho University, Portugal)

18:00
Using Proper Techniques to Manage Construction Documents and Work Processes: Core Competencies Required
Fatemeh Pariafsai (Bowling Green State University, USA); Manish Kumar Dixit (Texas A&M University, USA); Shirley Nelly Tandoh (Bowling Green State University, USA); Sadjad Pariafsai (Islamic Azad University, Iran); Stephen Mark Caffey (Texas A&M University, USA)

18:15
Empowering Future Engineers by Integrating Science Communication Into Undergraduate Labs
Caroline Cvetkovic, Keilin Jahnke, Maya Miriyala and Bethan Owen (University of Illinois Urbana-Champaign, USA)

Technical Program: Monday, October 14 (cont)

17:00 - 18:30
M704: Graduate Education 1
Session Chair: Ali Mehrizi-Sani (Virginia Tech, USA)
Room: Shaw

17:00
Enabling Computer Science Students to Choose Their Own Adventure in a Mandatory and Curricular Challenge-Based Learning Course
Jessica Lucchetta and Stefano Turrini (University of Trento, Italy); Milena Stoycheva (Junior Achievement Bulgaria, Bulgaria); Maurizio Marchese and Lorenzo Angeli (University of Trento, Italy)

17:15
WIP: Engineering Class Students' Epistemic Cognition When Interacting With Generative AI
Rosanna Yuen-Yan Chan (The Chinese University of Hong Kong, Hong Kong); Cecilia Chan (The University of Hong Kong, Hong Kong); Morris Jong, Zihao Hu and Yuming Zhang (The Chinese University of Hong Kong, Hong Kong)

17:30
Fair Tales of Interdisciplinary Learning: Unveiling Students Voices and Competencies Evolution in a Challenge-Based Learning Summer School
Tommaso Carraro and Jessica Lucchetta (University of Trento, Italy); German Varas (Universidad de La Serena, Chile); Milena Stoycheva (Junior Achievement Bulgaria, Bulgaria); Maurizio Marchese and Lorenzo Angeli (University of Trento, Italy)

17:45
Use of ChatGPT for Assessment Feedback on a Complex Programming Assessment
Aidan McGowan, Neil Anderson and Christopher Smith (Queen's University Belfast, United Kingdom (Great Britain))

18:00
Incorporating Privacy and Data Awareness in the Development of Artificial Intelligence Applications
Susan Conrad and Diane Murphy (Marymount University, USA)

18:15
Interactive Rubric Generator for Instructor's Assessment Using Prompt Engineering and Large Language Models
Haoze Du, M Parvez Rashid, Qinjin Jia and Edward F. Gehringer (North Carolina State University, USA)

Technical Program: Monday, October 14 (cont)

17:00 - 18:30
M705: AI/ML Learning Tools 1
Session Chair: Anjum Chida (Rice University, USA)
Room: Gunston

17:00
First-Year Engineering Students' Expertise and Trust in GenAI
Campbell R. Bego (University of Louisville & J. B. Speed School of Engineering, USA); Cenetria Crockett, Judith H Danovitch, Liliana G Martinez, Alwin K Rajkumar, Elisabeth L Thomas, Angela Thompson, Alvin Tran and Benarji Valavala (University of Louisville, USA)

17:15
Enhance Learning Performance Predictions With Explainable Machine Learning
Wan-Chong Choi (Macao Polytechnic University, Macao & CISUC, University of Coimbra, Portugal); Chan-Tong Lam (Macao Polytechnic University, Macao); António José Mendes (University of Coimbra & Dep. of Informatics Engineering, CISUC, Portugal)

17:30
Insights from a Socio-Temporal Approach to Student Failure Prediction through Discussion Forum Dynamics
Nidia G Lopez Flores (Reykjavik University, Iceland); Víctor Uc-Cetina (Universidad Autónoma de Yucatán, Mexico); Anna Sigridur Islind (Reykjavik University, Iceland); María Óskarsdóttir (Reykjavík University, Iceland)

17:45
Clustering Entity Relationship Diagrams: Enhancing Feedback Quality and Grading Consistency in Large Database Courses
Sohum Thadani and Hisham Benotman (Purdue University, USA); Abdussalam Alawini (University of Illinois at Urbana-Champaign, USA); Andrey Shore (Purdue University, USA); Soohong Ahn (Samsung Electronics, USA); Lei Gong (Purdue University, USA)

18:00
Leveraging Large Language Models to Automatically Investigate Core Tasks Within Undergraduate Engineering Work-Integrated Learning Experiences
Pauline Aguinalde, Jinnie Shin, Bruce F. Carroll and Kent J. Crippen (University of Florida, USA)

18:15
Toward Automated Evaluation of Student Presentation Body Language
Yassine Belkhouche (Missouri State University, USA)

Technical Program: Monday, October 14 (cont)

17:00 - 18:30
M706: K-12 STEM Teacher Education
Session Chair: Colleen Bailey (University of North Texas OSCAR Lab, USA)
Room: Fairchild

17:00
Assessing the Readiness of Pre-Service Mathematics Teachers in Utilizing the Scratch Application: A Case Study at Universiti Teknologi Malaysia
Abdul Halim Abdullah (Universiti Teknologi Malaysia, Malaysia & School of Education, Malaysia); Nurain Nadhirah Mohamad (Universiti Teknologi Malaysia, Malaysia); Mohd Hilmi Hamzah (School of Languages Civilisation and Philosophy, Malaysia)

17:15
Exploring the Attitudes of Computer Science High School Teachers Towards Gamification: A Work in Progress
Ana Vrcelj Bozic (University of Rijeka & Civil Engineering Technical School in Rijeka, Croatia); Natasa Hoic-Bozic and Martina Holenko Dlab (University of Rijeka, Croatia)

17:30
Investigating Teachers' Perceptions of Engineering Majors (WIP-RTP)
Esteban Donaire and Ryan Belo (University of Texas Rio Grande Valley, USA); Mounir Ben Ghalia (The University of Texas Rio Grande Valley, USA); Mohammad Al Mestiraihi (University of Texas Rio Grande Valley, USA)

17:45
Unveiling the Occupational Profiles of Inclusive STEAM Educators in K-6 Settings
Georgia Sakellaropoulou and Natalia Spyropoulou (Hellenic Open University, Greece); Achilles Kameas (Hellenic Open University & Computer Technology Institute, Greece)

18:00
Submerge, Learn, Succeed: Enhancing K-12 STEM Education Through Experiential Pedagogy in Naval Engineering
Alexander Grey (University of Connecticut & United States Navy, USA); Alexandra Hain (University of Connecticut, USA); Valerie Maier-Speredelozzi, John Koziatek, Christopher Cochran, Caleb Hines and Caroline Stabile (University of Rhode Island, USA)

18:15
Empowering Secondary School Teachers: Creating, Executing, and Evaluating a Transformative Professional Development Course on ChatGPT
Heidi Reichert and Benyamin T. Tabarsi (North Carolina State University, USA); Zifan Zang (Cornell University, USA); Cheri Fennell (Durham Public Schools, USA); Indira Bhandari (Wake County Public School System, USA); David Robinson (Durham Public Schools, USA); Madeline Drayton (Charlotte-Mecklenburg Schools, USA); Catherine Crofton (Wake County Public School System, USA); Matthew Lococo (Greene County Schools, USA); Dongkuan Xu and Tiffany Barnes (North Carolina State University, USA)

Technical Program: Monday, October 14 (cont)

17:00 - 18:30
M707: K-12 AI & Machine Learning 2
Session Chair: Sujing Wang
Room: Columbia 2

17:00

Enhancing Learning Objects Accessibility Through Speech-To-Text Based Architecture: A Comprehensive Triangulation Study

Venilton FalvoJr (University of São Paulo (USP), Brazil & Digital Innovation One (DIO), Brazil); Anderson S. Marcolino (Federal University of Paraná, Brazil); Diego Bruno (University of Sao Paulo & ICMC-USP, Brazil); Catherine Helen Martins Falvo (University of Araraquara, Brazil); Fernando S Osorio (University of São Paulo - ICMC & SBC - IEEE - ACM, Brazil); Ellen Barbosa (University of São Paulo, Brazil)

17:15

Study on a Data-Driven Adaptive Learning Support System Design for Individualized Optimal Learning

Takahito Horinouchi, Shin Wakitani, Tomohiro Hayashida and Takuya Kinoshita (Hiroshima University, Japan); Kento Tsutsumi (Yamaguchi University, Japan)

17:30

Maximizing Student Engagement in Coding Education with Explanatory AI

Badri Adhikari (University of Missouri-St. Louis, USA); Sameep Dhakal (Tribhuvan University, Nepal); Aadya Jha (Delhi University, India)

17:45

Improving Translation From Portuguese to Brazilian Sign Language With Speech-To-Text Integration Through Natural Language Processing

Andrew Flores Brongar, Sr (Federal University of Rio Grande, Brazil); Jordan Zitzke Pinho (Universidade Federal Do Rio Grande, Brazil); Rosa Vicari (Universidade Federal do Rio Grande do Sul, Brazil); Gisele M Simas (Federal University of Rio Grande (FURG), Brazil); Regina Barwaldt (Federal University of Rio Grande (FURG), Brazil & Center of Computational Sciences (C3), Brazil)

18:00

Let's Go for a Drive: Exploring AI's Societal Impact in K-8 Education With an Interactive Self-Driving Car Tool

Pranathi Rayavaram and Sashank Narain (University of Massachusetts Lowell, USA); Fred G Martin (University of Texas at San Antonio, USA)

18:15

Playful Learning in Robotics: A Case Study With Smart Motors Workshops

Milan Dahal (Tufts University & Center for Engineering Education and Outreach, USA); Chris Rogers (Tufts University, USA); William Church (Communicating Research in Climate STEM, USA)

Technical Program: Monday, October 14 (cont)

17:00 - 18:30
M708: First Year Engineering Education 2
Session Chair: Ashish Agrawal (Rochester Institute of Technology, USA)
Room: Embassy

17:00
Using InPods Platform for the Assessment of a Digital Design Course in the Baccalaureate Degree Engineering Technology Program
Mohammed Mujahid Ulla Faiz (Presidency University, India); Natya S (Presidency University & BMS Institute of Technology and Management, India); Safinaz S (Presidency University & Sir M V I T, India); K Bhanu Rekha (Presidency University & Sir MVIT, India)

17:15
Comparing The Transformative Experiences of Two Cohorts of a First-Year Engineering Program
Sukeerti Shandliya and Cedrick A. K A. K. Kwuimy (University of Cincinnati, USA)

17:30
WIP: Industry-Based Focus to Engineering Statics Instruction Using a Drafter/Checker Approach
Shana Shaw (Texas A&M University, USA); Noemi Mendoza (Texas A&M, USA); LaTasha T Starr (Texas A&M University, USA)

17:45
WIP: Perceptions of Agency in an Introductory Engineering Design Experience
Jutshi Agarwal (University at Buffalo, SUNY, USA); Corey Schimpf (University at Buffalo, USA & Finger Lakes Trail Conference, USA); David Evenhouse (Purdue University, USA)

18:00
Students as the Teachers: Positioning Undergraduates as Experts, Role-Models, and Guides to create Diverse Learning Communities
Tela Favaloro (University of California, Santa Cruz, USA)

18:15
Tinkering and Making to Inspire Engagement in First-Year Mechanical Engineering Students
Micah Lande (South Dakota School of Mines & Technology, USA)

17:00 - 18:30
M709: Amplifying Voices Through Animaker Animation: Results From a Longitudinal Study With Latino/a/x Engineering Students
Room: Columbia 3-4
Organizers: Joel Alejandro Mejia, Neethu Paul and Sofia Hernandez (The University of Texas at San Antonio, USA)

18:30 - 20:00
M800: Welcome Reception
Room: Heights Courtyard

Technical Program: Tuesday, October 15

7:00 – 18:00
Registration
Room: Terrace Foyer

7:30 - 8:00
T100: Continental Breakfast
Room: Columbia NorthWest

8:00 - 9:30
T101: DEI for STEM Faculty
Session Chair: Katherine Kim (National Taiwan University, Taiwan)
Room: Columbia 1

8:00
Data Use in the Design of Interventions to Improve Equity in Engineering Education
Julie M. Smith (Institute for Advancing Computing Education, USA); Jennifer Ocif Love and Claire Duggan (Northeastern University, USA)

8:15
Towards Gender Parity in Academic Editorial Boards: An Analysis of Current Trends and Barriers
Claudia Camacho Zuñiga (Tecnologico de Monterrey, Mexico & Institute for the Future of Education, Mexico); Claudia Bautista-Flores and Samira Hosseini (Tecnologico de Monterrey, Mexico)

8:30
Persistence in the Academy: Intersectional Experiences of Black Women Faculty in Computing
Christy L Chatmon (Florida State University, USA)

8:45
Sasha: A Narrative of a Learning Journey of an Instructor
Sarah Jayasekaran (University of Florida, USA); Saira Anwar (Texas A&M University, USA)

9:00
Work in Progress: Exploring Epistemic Identity to Support How Engineering Education Research Teams Negotiate Epistemic Differences
Courtney J Faber and Lorna Treffert (University at Buffalo, USA)

9:15
Navigating Institutional Change: The Impact of Faculty Mobility in Engineering Colleges in a Kerala Scenario
Bindu G R (College of Engineering Trivandrum, India)

Technical Program: Tuesday, October 15 (cont)

8:00 - 9:30
T102: Computing Education for Graduate Students
Session Chair: Mireilla Bikanga Ada (University of Glasgow, UK)
Room: Tenley Town

8:00
Enhancing Engineering Education Through LLM-Driven Adaptive Quiz Generation: A RAG-Based Approach
Sreekanth Gopi, Devananda Sreekanth and Nasrin Dehbozorgi (Kennesaw State University, USA)

8:15
A Data Science Course Utilizing GenAI
Jonathan W. Browning (Queen's University Belfast, United Kingdom (Great Britain)); John Bustard (Queens University Belfast, United Kingdom (Great Britain)); Neil Anderson (Queen's University Belfast, United Kingdom (Great Britain)); Leo Galway (Queens University Belfast, United Kingdom (Great Britain))

8:30
WIP: Mechanisms of Change: A Mixed-Methods Analysis of the Outcomes of a Computational Thinking Professional Development Program
Gabriela de la Rosa, Mariana Arboleda, Camilo Vieira and Juan D Parra (Universidad del Norte, Colombia)

8:45
Systematic Literature Review for Machine Learning Research in Education
hamzah arishi (University of Adelaide, Australia); Nickolas J Falkner (University of Adelaide & The University of Adelaide, Australia); Christoph Treude (Singapore Management University, Singapore); Thushari Attapatu (The University of Adelaide, Australia)

9:00
Cost-Effective Clusters in Education: A Model for Practical HPC Learning
Tiago Augusto Orcajo Demay Cordeiro (Insper, Brazil); Licia Sales Costa Lima (Insper, Brazil & UFABC, Brazil); Michel Silva Fornaciali (Insper, Brazil); Andre Filipe de Moraes Batista (INSPER, Brazil); Rafael Corsi Ferrao (Insper, Brazil)

Technical Program: Tuesday, October 15 (cont)

8:00 - 9:30
T103: Cybersecurity Education for Undergraduate Students 1
Session Chair: Sherif Abdelhamid (Virginia Military Institute, USA)
Room: Rock Creek

8:00
The Impact of the National Cyber League NCL on Students Skills in Cybersecurity
Yasser Alshehri (West Virginia University & Yanbu Industrial College, USA)

8:15
Coalescing Research into Modular and Safe Educational Cybersecurity Labs with AI Solutions
Tyler E Judd (University of Michigan - Flint, USA); Halil Bisgin (The University of Michigan - Flint, USA); Mohammad Derani (University of Michigan Ann Arbor, USA); Alvin Huseinović (University of Sarajevo, Bosnia and Herzegovina); Suleyman Uludag (The University of Michigan - Flint, USA)

8:30
WIP: Integrating Cybersecurity Education: Implementation of an Undergraduate Course on Malicious Thermal Sensor Defense
Amin Malekmohammadi (California State University, Bakersfield, USA); Ahmad Patooghy (North Carolina A& T University, USA); Abdel-Hameed A Badawy (New Mexico State University, USA)

8:45
Guided Learning and Interactive Visualization for Teaching & Learning Stack Smashing Attacks & Defenses: Experiences and Evaluation
Harini Ramaprasad, Meera Sridhar, Sushma I Dangeti and Soham Pradhan (University of North Carolina at Charlotte, USA); Islam Obaidat (North Carolina Agricultural and Technical State University, USA)

9:00
Active Learning for Introductory Cybersecurity
Jeffrey J Yackley (University of Michigan-Flint, USA)

9:15
Interactive Framework for Cybersecurity Education and Future Workforce Development
Sujan Ghimire and Muhtasim Alam Chowdhury (University of Arizona, USA); Ryan Tsang (University of California Davis, USA); Richard Yarnell (University of Central Florida, USA); Emma Heckert, Jaeden Carpenter, Yu-Zheng Lin and Muntasir Mamun (University of Arizona, USA); Ronald F DeMara (University of Central Florida, USA); Setareh Rafatirad (University of California Davis, USA); Pratik Satam and Soheil Salehi (University of Arizona, USA)

Technical Program: Tuesday, October 15 (cont)

8:00 - 9:30
T104: Graduate Education 2
Session Chair: Asad Azemi (University of Maryland Eastern Shore, USA)
Room: Shaw

8:00
Bridging Worlds: The Role of Indigenous Knowledge in Engineering Education: A Literature-Based Study
Md Tarique Hasan Khan (Navajo Technical University, USA); Saki Rezwana (University of Connecticut, USA)

8:15
Workshop on "Interactive displays: use, benefits, environmental and social impacts"
Estelle Belin Di-Stephano (GINP-UGA, France); Panagiota Morfouli (Grenoble INP-UGA, France); Coralie Le Rasle (Grenoble INP, France & Phelma Minatec, France); Laura Mazzarella (G INP-UGA, France)

8:30
A Young Researcher's Dual Lens: A Twofold Autoethnographic Exploration of Generative AI in the Realms of Doing Research and Teaching Computer Science and Media Design Education
Lisa Kuka and Corinna Hörmann (Johannes Kepler University Linz, Austria); Barbara Sabitzer (Johannes Kepler University, Austria)

8:45
Investigating Student Learning in Metaverse
Hung-Fu Chang (University of Indianapolis, USA); Mohammad Shokrolah Shirazi (Marian University, USA); John Somers and Gaoming Zhang (University of Indianapolis, USA)

9:00
WIP: Employing Artificial Intelligence and Machine Learning to Enhance Student Learning and Outcomes With a Focus on Building Trust and Interaction
Yuexin Liu (Texas A&M University, USA); Haodi Jiang (Sam Houston State University, USA); Ben Zoghi (Texas A&M University, USA)

Technical Program: Tuesday, October 15 (cont)

8:00 - 9:30
T105: AI/ML Learning Tools 2
Session Chair: Sangit Sasidhar (National University of Singapore, Singapore)
Room: Gunston

8:00
Automated Speech Proficiency Assessment for Conversations on Technical Subjects
Akhila Yaragoppa, Utkarsh Agarwal, Arnav Rustagi, Anushka Desai, Siddharth Siddharth and Brainerd Prince (Plaksha University, India)

8:15
Empowering Future Engineers: An Educational Journey From AI Fundamentals to Healthcare Innovations
Ibrahim Abdelmawla, Ahmed Fayez, Ashraf Gaffar and Ashfaq Khokhar (Iowa State University, USA)

8:30
Using Generative AI to Implement UDL Principles in Traditional STEM Classrooms
Maddy Kalaigian, Michael S. Thompson, Janet VanLone and Robert Nickel (Bucknell University, USA)

8:45
GAIDE: A Framework for Using Generative AI to Assist in Course Content Development
Ethan Dickey and Andres Bejarano (Purdue University, USA)

9:00
Gamification to Explore Capital and Privilege in Computing and Engineering Education
Sri Yash Tadimalla (University of North Carolina at Charlotte, USA); Thom Kunkeler (Uppsala University, Sweden)

9:15
Impact of Demographic and Co-Curricular Factors on the Academic Success of Students from Low-Income Families: A Scholarship Program Study
Andres Gonzalez-Nucamendi (Tecnologico de Monterrey, Escuela de Diseño Ingeniería y Arquitectura, Mexico); Luis J. Neri (Tecnologico de Monterrey & Escuela de Ingeniería y Ciencias, Mexico); Rosa María Guadalupe García-Castelán, Víctor Robledo-Rella and Jorge Valverde-Rebaza (Tecnologico de Monterrey, Mexico); Julieta Noguez (Tecnologico de Monterrey & Escuela de Ingeniería y Ciencias, Mexico)

Technical Program: Tuesday, October 15 (cont)

8:00 - 9:30
T106: K-12 STEM Education 1
Session Chair: Mehdi Roopaei (University of Wisconsin-Platteville, USA)
Room: Fairchild

8:00
STEM Education and Mathematics Performance Among Orang Asli Primary School Students in Johor, Malaysia: Challenges and Recommendations
Abdul Halim Abdullah (Universiti Teknologi Malaysia, Malaysia & School of Education, Malaysia); Abdul Hakim Abd Jalil (School of Education, Universiti Teknologi Malaysia, Malaysia); Wan Farah Wani Wan Fakhruddin (Universiti Teknologi Malaysia, Malaysia)

8:15
A Multimodal Approach for Real-Time Engagement Monitoring in E-Learning Using Machine Learning
Rohan Shankar (Cornell University, USA)

8:30
WIP: Relationship Between Eye Gaze Points and Comprehension Level in On-Demand Learning Contents in Elementary School Students
Satori Hachisuka, Kayoko Kurita and Shin'ichi Warisawa (The University of Tokyo, Japan)

8:45
WIP: Understanding Students' In-Video Dropout Behavior in Large Online Math Learning Platform
Zifeng Liu (University of Florida & USA, USA); Rui Guo, Yukyeong Song and Wanli Xing (University of Florida, USA)

9:00
Nurturing Hybrid Work Literacy in Upper Secondary Schools: Selecting the Best Hybrid Work Configuration for Coding Camps
Ilenia Fronza (Free University of Bolzano, Italy); Luis Corral (ITESM Campus Queretaro, Mexico); Gennaro Iaccarino (Direzione Istruzione e Formazione Italiana, Italy)

9:15
Assessment Technique to Address the Diversity of Students and the Pedagogies
Salman Abdul Moiz (University of Hyderabad, Hyderabad, India)

Technical Program: Tuesday, October 15 (cont)

8:00 - 9:30
T107: K-12 AI & Machine Learning 3
Session Chair: Sathish Akula (Florida Polytechnic University, USA)
Room: Columbia 2

8:00
Avoiding 'Sinking the Boat' While not 'Missing the Boat': K-12 Leaders' Early-on Perspectives of AI Risks and Benefits and Their Implications for Developers
Sharon Mason (Rochester Institute of Technology, USA); Raffaella Borasi, David Miller, Patricia Vaughan-Brogan, Yu Jung Han and Karen DeAngelis (University of Rochester, USA)

8:15
Impact of Generative AI on Learning: Foci and Parameters for an Assessment Tool
Masood Khan, Chris Ford, Yu Dong and Nasrin Afsarimanesh (Curtin University, Australia)

8:30
Critical Factors for a Reliable AI in Tutoring Systems on Accuracy, Effectiveness, and Responsibility
Simone C. dos Santos, Davi Mendes Maia, Luis Gabriel Lima, Vinícius Luiz Franca, Alexsandro Henrique Lima and Daniel Andrade (Federal University of Pernambuco, Brazil)

8:45
WIP: Citizen Science Tools With Machine Learning as a Pathway to Engage High School Students in Research
Fahim Hasan Khan (California Polytechnic State University, USA); Emily Lovell (University of California, Santa Cruz, USA); Akila de Silva (San Francisco State University, USA); Gregory Dusek (National Oceanic and Atmospheric Administration, USA); James Davis and Alex Pang (University of California Santa Cruz, USA)

9:00
Beyond Imagination: Leveraging Generative AI to Enhance Learning Through Story World Analogies
Dünya Baradari (MIT Media Lab & Augmentation Lab, USA); Carey Ann Strelecki (Harvard Graduate School of Education & Massachusetts Institute of Technology, USA); Julia Xia (Massachusetts Institute of Technology, USA); Harry Han (Harvard Graduate School of Education, USA)

9:15
From Questions to Insightful Answers: Building an Informed Chatbot for University Resources
Subash Neupane, Elias Hossain, Jason Keith, Himanshu Tripathi, Farbod Ghiasi, Noorbakhsh Amiri Golilarz, Amin Amirlatifi, Sudip Mittal and Shahram Rahimi (Mississippi State University, USA)

Technical Program: Tuesday, October 15 (cont)

8:00 - 9:30
T108: First Year Engineering Education 3
Session Chair: Ashok Ramasubramanian (Union College, USA)
Room: Embassy

8:00
WIP: A Framework for the HyFlex Learning - A Case Study
Senthilkumar R d (Middle East College, Oman); Ramalingam Dharmalingam (Majan University College, Oman); Alya Al Farsi (Middle East College, Oman); Mahalakshmi Dharmalingam (AVC College of Engineering, India); Vaishnavi Dharmalingam (SASTRA Deemed to Be University, India)

8:15
Exploring the Impact of Math Performance on Sense of Belonging following a Summer Bridge Program
Liliana G Martinez (University of Louisville, USA); Campbell R. Bego (University of Louisville & J. B. Speed School of Engineering, USA)

8:30
Breaking Boundaries: Introducing First-Year Engineering Students to Computational Fluid Dynamics
Juan D Ortega-Alvarez (Virginia Tech, USA & Universidad EAFIT, Colombia); Matthew Norris (Virginia Tech, USA); Michelle Soledad (Virginia Tech & Ateneo de Davao University, USA)

8:45
Work-In-Progress: Students' Prompting Strategies When Solving an Engineering Design Task
David Reeping and Aarohi Shah (University of Cincinnati, USA)

9:00
WIP: Modifying In-Class Activities to Engage Engineering Students and Activate Learning
Andrew J Gray (Purdue University, USA)

9:15
How Do First-Year Undergraduate Engineering Students' Self-Reported Reasons and Motivations to Participate in Formative Assessments Translate Into Their Learning Achievement: An Exploratory Study
Assad Iqbal (Purdue University, USA); Oenardi Lawanto (Utah State University & College of Engineering, USA); Muhammad Asghar (University of Cincinnati, USA)

Technical Program: Tuesday, October 15 (cont)

8:00 - 9:30
T109: Implementing a Teaching Framework of Critical Consciousness Embedded in Engineering Design Courses
Room: Columbia 3-4
Organizers: Renata A Revelo (University of Illinois at Chicago, USA); Joel Alejandro Mejia (The University of Texas at San Antonio, USA); Julio Mendez (University of Illinois, Chicago, USA)

8:00 - 17:00
Education Society Board of Governors Meeting
Room: Van Ness

9:30 - 11:00
ERM Business Meeting with FIE Steering Committee
Room: Embassy

9:30 - 10:30
T200: Coffee Break
Room: Columbia NorthWest

9:30 - 10:30
PS101: Poster Session 1
Session Chair: Arthur Depoian (IEEE, USA)
Room: Columbia NorthWest

WIP: Developing a Conceptual Model to Facilitate Adoption of Evidence-Based Instructional Practices in Engineering Classrooms
Prateek Shekhar (New Jersey Institute of Technology, USA); Stephanie Adams, Shane Brown and Jeffrey. Knowles (Oregon State University, USA)

[WIP] Dimensions of Engineering Graduate Students' Sense of Belonging to Their Academic Unit and Research Lab: Comparisons of Master's and Doctoral Students and Domestic and International Students
Eunsil Lee (University at Buffalo, USA)

A Systematic Review of Factors Influencing Student Interest and Choice of STEM MajorsSyeda Fizza Ali and Saira Anwar (Texas A&M University, USA)

WIP: A Qualitative Study of Students' Code Review Practices in a Computer Science Program
Keerti Banweer (The University of Oklahoma, USA); Deborah Trytten (University of Oklahoma, USA)

Innovative Practices and Unintended Consequences in Engineering Education: A Comprehensive Analysis of Project-Based Learning and System Design
Etahe Johnson, Willie L. Brown, Jr and Darius Dale (University of Maryland Eastern Shore, USA)

Technical Program: Tuesday, October 15 (cont)

9:30 - 10:30
PS101: Poster Session 1 (cont)
Session Chair: Arthur Depoian (IEEE, USA)
Room: Columbia NorthWest

Auto Critiquers in Higher Education
Joseph Roy Teahen, Daniel T Masker and Leo C. Ureel II (Michigan Technological University, USA); Laura Brown (Michigan Tech, USA); Michelle Edith Jarvie-Eggart, PE and Jon Sticklen (Michigan Technological University, USA); Diane Rover (Iowa State University, USA); Laura Albrant and Mary E Benjamin (Michigan Technological University, USA); Fana Teffera and Juno Robertson (Iowa State University, USA)

Work-In-Progress: A Review of Methods for Analyzing a Curriculum Quantitatively Using Curricular Analytics
Nahal Rashedi and David Reeping (University of Cincinnati, USA)

Case Study: Integrating IoT Concepts Into a High-School Level Robotics Project (WIP)
Mehrube Mehrubeoglu (Texas A&M University-Corpus Christi, USA)

Integrating Physical and Virtual Prototyping in the Classroom
Micah Lande (South Dakota School of Mines & Technology, USA)

Aligning Co-Op and Curricular Learning Goals Across a Mechanical Engineering Curricula
Micah Lande (South Dakota School of Mines & Technology, USA)

A Comparative Evaluation of EdGUIDE Tool for SMART Learning Objectives
Daniel Bang (USA); Syeda Fizza Ali (Texas A&M University, USA); Swetha Nittala (Stanford University, USA); Saira Anwar (Texas A&M University, USA)

Toward Gender Parity in Stem: A Roundtable Discussion
Hortense Gerardo (University of California, San Diego, USA); Bowen Hui (University of British Columbia, Canada); Noemi Mendoza (Texas A&M, USA)

Case Study: Integrating IoT Concepts Into a High-School Level Robotics Project (WIP)
Lifford McLauchlan (Texas A&M University-Kingsville); Mehrube Mehrubeoglu (Texas A&M University-Corpus Christi, USA); Unal McLauchlan (W.B. Ray and DelMar College, USA)

Ajuni's Engineering Career Story Through the Unfolding Model of Turnover
Christina A. Pantoja (Campbell University, USA); Joyce B. Main (Perdue University, USA)

Incorporation of Data Science Modules into Interdisciplinary Undergraduate Courses at Multiple Institutions and Research Findings
Vinod Lohani (Virginia Tech, USA)

Technical Program: Tuesday, October 15 (cont)

10:30 - 12:00
T201: Attitudes and Perceptions 2
Session Chair: Anjum Chida (Rice University, USA)
Room: Columbia 1

10:30
Innovation Unleashed: A Qualitative Study on Nurturing Creativity Through Virtual Reality and Integrated Engineering and Visual Arts Education
Arpita Kurdekar, Daniel Burkey and Michael F Young (University of Connecticut, USA)

10:45
A Semester-long Holistic Growth-Mindset Experience for First-Year Computing Students: Emerging Intersections
Sharon Mason (Rochester Institute of Technology, USA); Kimberly Fluet (University of Rochester, USA)

11:00
[WIP] Sense of Belonging in STEM Higher Education: Preliminary Results From a Scoping Literature Review
Eunsil Lee and Collins Ugonna Lawrence (University at Buffalo, USA)

11:15
Challenges and Preferences of Learning Machine Learning: A Student Perspective
Effat Farhana (Vanderbilt University, USA); Fan Wu (Tuskegee University, USA); Hossain Shahriar (University of West Florida, USA); Shubhra Kanti Karmaker Santu and Akond Rahman (Auburn University, USA)

11:30
Students Perceptions of Authentic Learning for Learning Information Flow Analysis
Akond Rahman (Auburn University, USA); Fan Wu (Tuskegee University, USA); Hossain Shahriar (University of West Florida, USA)

11:45
Understanding Undergraduate Students' Flow State in Gamified and Non-Gamified Educational Systems: A Qualitative Case Study
Pasqueline Dantas (Federal University of Paraiba, Brazil); Wilk Oliveira, Juho Hamari, Seyedhasan Mirhosseini and Andrea Brambilla (Tampere University, Finland)

Technical Program: Tuesday, October 15 (cont)

10:30 - 12:00
T202: Augmented or Virtual Reality, Digital Twins for Undergraduate Education
Session Chair: Senthilkumar RD (Middle East College, Oman)
Room: Tenley Town

10:30
WIP: A Review of Digital Twin Technology in Undergraduate Control Engineering Education: Applications, Challenges, and Future Directions
Crystal L Blackwell and Sean Rocke (The University of the West Indies, Trinidad and Tobago)

10:45
By Students, for Students: Development of Custom Virtual Reality Applications for Gamified Teaching and Learning in Engineering Courses
Daniel H Cortes, Ibukun S Osunbunmi, Laura Pauley, Minkyung Lee and Andrea Gregg (The Pennsylvania State University, USA)

11:00
AR-Classroom: Integrating Conversational Artificial Intelligence With Augmented Reality Technology for Learning Spatial Transformations and Their Matrix Representation
Uttamasha Monjoree, Samantha D. Aguilar, Chengyuan Qian, Carl Van Huyck, Shu-Hao Yeh, Preston Tranbarger, Leo Solitare-Renaldo, Luke Duane-Tessier, Heather Burte, Philip Yasskin, Jeffrey Liew, Dezhen Song, Francis Quek and Wei Yan (Texas A&M University, USA)

11:15
Student Satisfaction in Virtual Reality Laboratory Environments
Deborah Moyaki and Isaac D Dunmoye (University of Georgia, USA); Dominik May (University Wuppertal, Germany); Nathaniel Hunsu (University of Georgia, USA)

11:30
Enhancing Tacit Knowledge Construction in Architectural Engineering Education Through 4E Cognition and Virtual Reality
Amir Goli and Mohammad R. Dastmalchi (University of Kansas, USA)

11:45
Embodied Learning in Virtual Reality: Comparing Direct and Indirect Interaction Effects on Educational Outcomes
Mohammad R. Dastmalchi and Amir Goli (University of Kansas, USA)

Technical Program: Tuesday, October 15 (cont)

10:30 - 12:00
T203: Cybersecurity Education for Undergraduate Students 2
Session Chair: Reza Rahdar (Embry Riddle Aeronautical University, USA)
Room: Rock Creek

10:30
Analyzing the Effectiveness of Reflection Prompts Accompanying Cybersecurity Assignments Using Natural Language Processing
Cheryl L Resch and Christina Gardner-McCune (University of Florida, USA)

10:45
WIP: CryptoQuest - Interactive Animation Series for Teaching Cryptography, Post-Quantum Cryptography, and Cybersecurity Using Extended Reality (XR)
Sherif Abdelhamid, Sarah Patterson, Blain Patterson, Gabriele Woodward, Rukshana Sarkari and Hayden Rose (Virginia Military Institute, USA)

11:00
CyberSkiller: Empowering STEM Undergraduates for the Future of Cybersecurity
Gahangir Hossain and Kinshuk (University of North Texas, USA)

11:15
Detecting Unsuccessful Students in Cybersecurity Exercises in Two Different Learning Environments
Valdemar Švábenský (University of Pennsylvania, USA); Kristián Tkáčik (Masaryk University, Czech Republic); Aubrey Birdwell (Georgia Institute of Technology, USA); Richard Weiss (The Evergreen State College, USA); Ryan S. Baker (University of Pennsylvania, USA); Pavel Celeda and Jan Vykopal (Masaryk University, Czech Republic); Jens Mache (Lewis & Clark College, USA); Ankur Chattopadhyay (Northern Kentucky University, USA)

11:30
Risks and Ethical Concerns in Cybersecurity With the Advancement of Artificial Intelligence - A Systematic Review
Ayden C Perez (USA); Saira Anwar (Texas A&M University, USA)

11:45
ChatGPT vs. Gemini: Comparative Evaluation in Cybersecurity Education with Prompt Engineering Impact
Thomas Nguyen and Hossein Sayadi (California State University Long Beach, USA)

Technical Program: Tuesday, October 15 (cont)

10:30 - 12:00
T204: Graduate Education 3
Session Chair: Yasser Alshehri (Yanbu Industrial College, Saudi Arabia)
Room: Shaw

10:30
A Learning Framework for Career Transition Towards Software Engineering
Jose Reginaldo Hughes Carvalho (Federal University of Amazonas, Brazil); Rebeca Velásquez Carvalho (Universidade Positivo, Brazil); Janete Knapik (Positivo Univrsity, Brazil); Nicolas Riccieri G. Assumpção and Luís Momenté (Motorola Mobility, Brazil)

10:45
Incorporating AI in the Teaching of Requirements Tracing Within Software Engineering
Juan Ortiz Couder, William C Pate, Daniel A Machado and Omar Ochoa (Embry-Riddle Aeronautical University, USA)

11:00
Graduate Programs in Computing at the University of BLIND REVIEW: Comparison of Academic Papers and Collaborations by Gender
Maristela Holanda and Mariana Vale (University of Brasilia, Brazil); Dilma Da Silva (TAMU, USA); Aletéia P. F. Araúdo (Universidade de Brasília (UnB), Brazil); Celia G. Ralha (University of Brasilia, Brazil)

11:15
WIP: Using the Case Methodology in Electrical Engineering Education - the Example of Electrification of the Aviation Industry
Olof Lindahl and Jennifer Leijon (Uppsala University, Sweden)

11:30
Assessing the Effectiveness of ChatGPT in Preparatory Testing Activities from Software Specification
Susmita Haldar (Fanshawe College & Western University, Canada); Mary Pierce (Fanshawe College, Canada); Luiz F. Capretz (University of Western Ontario, Canada)

Technical Program: Tuesday, October 15 (cont)

10:30 - 12:00
T205: AI/ML Learning Tools 3
Session Chair: Mireilla Bikanga Ada (University of Glasgow, UK)
Room: Gunston

10:30
WIP: ARTful Insights From A Pilot Study on GPT-Based Automatic Code Reviews in Undergraduate Computer Science Programs
Aaron S Crandall and Bryan J Fischer (Gonzaga University, USA); Johannah L Crandall (University of Michigan, USA)

10:45
Advancing Healthcare AI Education Through Cloud Computing: Benchmarking AWS vs. GCP
Ahmed Fayez, Ibrahim Abdelmawla, Ashraf Gaffar and Ashfaq Khokhar (Iowa State University, USA)

11:00
WIP: Advancing Scholarly Pursuits Within Standard Curriculum Through the Ocean County College Honors by Contract Program
Pamela A. M. Bogdan and Taylor Auriano (Ocean County College, USA)

11:15
Effects of Proactive Interaction and Instructor Choice in AI-Generated Virtual Instructors for Financial Education
Thanawit Prasongpongchai (KBTG, Thailand); Pat Pataranutaporn (Massachusetts Institute of Technology, USA); Auttasak Lapapirojn and Chonnipa Kanapornchai (KBTG, Thailand); Joanne Leong (Massachusetts Institute of Technology, USA); Pichayoot Ouppaphan, Kavin Winson and Monchai Lertsutthiwong (KBTG, Thailand); Pattie Maes (MIT Media Laboratory, USA)

11:30
System for Emotion and Engagement Recognition in Education (SEERE): An AI-Enabled System for Responsive Teaching
N P Subheesh (SRM University AP); Sai Krishna Vishnumolakala and Sadwika Vallamkonda (SRM University AP, India); Sobin C C (SRM University Amaravati, AP, India); Prabhat Kumar (LUT University, Finland); Randhir Kumar (SRM University, India)

11:45
WIP - Development of Critical Thinking in AEC Students Aided by Artificial Intelligence
Miguel Andrés Guerra (Universidad San Francisco de Quito USFQ, Ecuador); Sixto A. Duran-Ballen (Universidad San Francisco de Quito, Ecuador); Raúl E Toscano (Universidad San Francisco de Quito USFQ, Ecuador); Blanca Esthela Moscoso (Universidad Central del Ecuador, Ecuador)

Technical Program: Tuesday, October 15 (cont)

10:30 - 12:00
T206: K-12 STEM Education 2
Session Chair: Colleen Bailey (University of North Texas, USA)
Room: Fairchild

10:30
The Main Factors of Enem: A Literature and Microdata Perspective
Jacinto José Franco and Fernanda Luzia De A. Miranda (IFMT, Brazil); Jacques Duílio Brancher (Universidade Estadual de Londrina, Brazil); Lirian Keli Dos Santos (IFMT, Brazil)

10:45
Machine Learning Models for Predicting Student Performance in IoT-Enhanced Education
Tomohiro Hayashida and Shin Wakitani (Hiroshima University, Japan); Kento Tsutsumi (Yamaguchi University, Japan); Takuya Kinoshita, Ichiro Nishizaki and Shinya Sekizaki (Hiroshima University, Japan)

11:00
Using Factor Analysis to Increase Accuracy of Neural Networks for Predicting Student Test Scores
Michael Brown and Maliha Momtaz (University of Maryland Baltimore County, USA); Aaron Mai (Texas A&M College Station, USA); Dhruvil Modi (University of Maryland Baltimore County, USA)

11:15
A Twinkle in Their Eye: Factors That Spark Motivation in Instructors and Students
Gabriela E Gomez, Joshua Earl Howell and Rory Petersen (Texas A&M University, USA); Glen Hordemann (Texas A&M University & Texas A&M Embodied Interaction Lab, USA)

11:30
A Quantitative Analysis of a Summer Bridge Program's Impact on Students' Non-Academic Indicators
Shreya Gupta, Chetan Goenka and Narges Norouzi (University of California, Berkeley, USA)

11:45
Exploring the Impact of Systems Engineering Projects on STEM Engagement and Learning
Mohammed Tonkal (Tufts University & King Abdulaziz University, USA); Ashley Wu (Tufts Center for Engineering Education and Outreach, USA); Chris Rogers (Tufts University, USA)

Technical Program: Tuesday, October 15 (cont)

10:30 - 12:00
T207: K-12 Teacher Professional Development
Session Chair: Dr Bindu G R (College of Engineering Trivandrum, India)
Room: Columbia 2

10:30
WIP: Engineering and Learning Affordances for Multilingual Learners in Elementary Classrooms- A Case Study of One Exemplary Teacher
Duncan Mullins, Jessica Swenson and Mary McVee (University at Buffalo, USA)

10:45
Developing Sustainable Open Educational Resources for Teaching Computer Ethics and Digital Skills
Roland Ambros, Dominik Dolezal and Verena Hermüller (University of Vienna, Austria); Renate Motschnig (University of Vienna & Faculty of Computer Science, Austria)

11:00
Teachers' Development of Competence in Managing Generative AI Technology: Findings From a Qualitative Interview Series
Michael Jemetz (University of Vienna & DoCS, Austria); Renate Motschnig (University of Vienna & Faculty of Computer Science, Austria)

11:15
Using the XXXXX Coaching Model to Implement Inquiry, Technology, and Engineering Design in K-9 Classrooms
Nancy Ruzycki and Krista D Chisholm (University of Florida, USA)

11:30
Professional Learning in Computational Thinking for Early Childhood Teachers in Latin America
Alejandro Espinal (Universidad del Norte, Colombia); Eric Bredder (University of Virginia, USA); Camilo Vieira (Universidad del Norte, Colombia); Jennie Chiu (University of Virginia, USA); Kim Wilkens (University of Virginia, Colombia)

11:45
Six Weeks With ROSE: Teacher Perspectives on Computer Science Professional Development
Zihan Zan, Razib Iqbal, Siming Liu, Ajay K Katangur and Diana Piccolo (Missouri State University, USA)

10:30 - 12:00
T209: Special Session: Workshops That Work! Using Evidence-Based Principles for Inclusive and Engaging Workshop Development and Facilitation
Room: Columbia 3-4
Organizers: Stephanie Cutler (Penn State University, USA); Ibukun S Osunbunmi (The Pennsylvania State University, USA)

Technical Program: Tuesday, October 15 (cont)

12:00 - 13:45
T300: Awards Ceremony Luncheon
Room: Columbia 5-12

12:00 - 13:45
Keynote
The Robots Are Coming: Teaching Interdisciplinary and Inclusive Courses to Engineers and Beyond
Speaker: R. Iris Bahar, Computer Science Department Head (Colorado School of Mines, USA)
Room: Columbia 5-12

13:45 - 15:15
T501: STEM Education for Faculty
Session Chair: Amber Kemppainen (Michigan Technological University, USA)
Room: Columbia 1

13:45
WIP: Beyond Keywords: Demonstrating Reproducible and Transparent Database Search Strategies for Engineering Education Systematic Reviews
Margaret Phillips, Jason Reed and David Zwicky (Purdue University, USA)

14:00
Research Areas and Funding Trends through NSF Funded Awards in Engineering Education between 2012 and 2022
Gadhaun Aslam and Idalis Villanueva Alarcón (University of Florida, USA)

14:15
Enhancing Interior Design Education Through the Integration of AIGC Tools: A Novel "Creator-Thon" Approach
Xiaomei Li, Lei Xia, Pengfei Wu, Ziming He, Danyang Chen and Ling Fan (Tongji University, China)

14:30
WIP: Embracing Challenges for Transformative Change in Research Capacity at Hispanic-Serving Institutions
Ann Gates and Elizabeth Hall (University of Texas at El Paso, USA); Sepi Hejazi Moghadam (Google, USA)

14:45
Diversity, Equity, and Inclusion: A Systems Design Viewpoint
Asad Azemi (University of Maryland Eastern Shore & University of Wisconsin - Platteville, USA)

15:00
STEM Culture From Faculty Perspectives: How Faculty See Climate in STEM and Its Effect on the Sense of Belonging of Traditionally / Historically Excluded Students
Samieh Askarian Khanamani, Whitney Gaskins, Ahjah Johnson and Mark Onyango (University of Cincinnati, USA)

Technical Program: Tuesday, October 15 (cont)

13:45 - 15:15
T502: AI Tutoring for Undergraduate Students
Session Chair: Nadia Najjar (University of North Carolina Charlotte, USA)
Room: Tenley Town

13:45
Enhancing Adaptive Online Chemistry Learning: A Case Study on the Impact of QA Tutor Support
Indriyati Atmosukarto, He Tong Ng, Muhammad Faiezin Bin Osman, Jamil Bin Jasin, Prasad Iyer and Wean Sin Cheow (Singapore Institute of Technology, Singapore)

14:00
An Intelligent Tutoring System Proposal Based on Chatbot and Learning Styles to the Project Management Study
Davi Mendes Maia, Ewerton Felipe Ferreira Da Silva and Simone C. dos Santos (Federal University of Pernambuco, Brazil); Alixandre Santana (OTH Regensburg, Germany)

14:15
An Evidence Gap Map Analysis of Personalized Adaptive Learning in Undergraduate Mathematics
Debbie L. Hahs-Vaughn, Patsy Moskal, Katiuscia Teixeira, Tammy Muhs, Oluwaseun P. Farotimi, Christina Carassas and Corinne Bishop (University of Central Florida, USA)

14:30
ProgMate: An Intelligent Programming Assistant Based on LLM
Ying Li (Beijing University of Aeronautics and Astronautics, China)

14:45
WIP: Beyond Code: Evaluating ChatGPT, Gemini, Claude, and Meta AI as AI tutors in Computer Science and Engineering Education
Sagnik Nath (UC Santa Cruz, USA); So Yoon Yoon (University of Cincinnati, USA)

Technical Program: Tuesday, October 15 (cont)

13:45 - 15:15
T503: Attitudes and Perceptions of Undergraduate Students
Session Chair: Sherri Weitl-Harms (Creighton University, USA)
Room: Rock Creek

13:45
Addressing the Talent Gap in Semiconductors: Motivators and Barriers to Career Choices
Hyo Kang, Serene Cheon, Alice Abia-Okon, Aida Damanpak, Wanli Xing and Navid Asadizanjani (University of Florida, USA)

14:00
Examining the Impact of Social Identities on Engineering College Students' Contributions to Teams
Xiaping Li (University of Michigan, USA); Robin R Fowler (University of Michigan & Michigan State University, USA); Mark Mills (University of Michigan, USA)

14:15
Late or Not Late: Student Perception of Performance, Confidence and Sense of Belonging When Late Submission is Accepted
Debarati Basu (Embry-Riddle Aeronautical University, USA); Nadia Najjar and Kaitlyn Gosline (University of North Carolina at Charlotte, USA)

14:30
WIP: Exploring the Interest in Microelectronics of Computer Science and Engineering Students through a Multidisciplinary Approach
Andrea Goncher (University of Florida, Australia); Laura M Cruz Castro (University of Florida, USA)

14:45
WIP: Understanding Emotional and Transformative Journeys in a First Year Engineering Program
Christopher Rivers, Sukeerti Shandliya and Cedrick A. K A. K. Kwuimy (University of Cincinnati, USA)

15:00
Learning Beliefs of Engineering Faculty and Their Students. How Might Alignments and Misalignments Affect Educational Change Initiatives?
Jonathan Stolk (Olin College, USA)

Technical Program: Tuesday, October 15 (cont)

13:45 - 15:15
T504: Graduate Education 4
Session Chair: Mireilla Bikanga Ada (University of Glasgow, UK)
Room: Shaw

13:45
Exploring Knowledge and Skill-Based Performance of STEM Students to Digital, Written and Video-Based Tutorials for Cell Culture Techniques
Naqash Gerard, Idalis Villanueva Alarcón and Jing Pan (University of Florida, USA)

14:00
WIP: The Lean Canvas for Invention (LCI): An Integrated Framework for Research Development, Matrix Mentoring, and Career Development Training
Cynthia Furse (University of Utah & LiveWire Innovation, LLC, USA); A. J. Metz, Karen Tao and Donna Ziegenfuss (University of Utah, USA); Arabella Bhutto (SABS University of Arts, Design, and Heritages, USA)

14:15
Evolution of Design Concepts From a Highly Successful Graduate Student Design Team
Kristoffer G. Sjolund, Shiho Nakamura, Micheal Helms and Julie Linsey (Georgia Institute of Technology, USA)

14:30
Work-In-Progress: Using AI Tools for Supplemental Learning in a Lean Concepts Class
Hugh L Mcmanus (Northeastern University & Loyola Marymount University, USA)

14:45
Use of Generative Artificial Intelligence in the Education of Software Verification and Validation
Ayca Tuzmen (Arizona State University, USA)

Technical Program: Tuesday, October 15 (cont)

13:45 - 15:15
T505: AI/ML Learning Tools 4
Session Chair: Campbell R Bego (University of Louisville, USA)
Room: Gunston

13:45
Productive Uses of GAI: Preliminary Findings From a Capstone Course
Crista Mohammed and Wayne Sarjusingh (The University of the West Indies, Trinidad and Tobago)

14:00
Explore Public's Perspectives on Generative AI in Computer Science (CS) Education: A Social Media Data Analysis
Sunggyeol Oh, Yi Cao and Andrew Katz (Virginia Tech, USA); Jialu Zhao (Stanford University, USA)

14:15
Credibility Metrics for Student-Assigned Labels of Textual Comments
Varsha Akinepalli, Arnab Datta, Banpreet Singh Chhabra, Sourabh Pardeshi and Saail Ganesh (North Carolina State University, USA); Dhruv Patel (Institute of Advanced Research, India); Edward F. Gehringer (North Carolina State University, USA)

14:30
An RSB-GNN-Based EEG Approach for Exploring Students' Affective States in E-Learning
Ting Li and Chuantao Yin (Beihang University, China); Yanmei Chai (Central University of Finance and Economics, China); Hui Chen, Wenge Rong and Yuanxin Ouyang (Beihang University, China)

14:45
From Assistance to Misconduct: Unpacking the Complex Role of Generative AI Use in Student Learning
Andreas Axelsson, Daniel Tomas Wallgren, Udit Verma, Åsa Cajander, Mats Daniels and Anna Eckerdal (Uppsala University, Sweden); Roger McDermott (Robert Gordon University, United Kingdom (Great Britain))

15:00
Revolutionizing Undergraduate Learning: CourseGPT and Its Generative AI Advancements
Ahmad M. Nazar, Mohamed Y. Selim, Ashraf Gaffar and Shakil Ahmed (Iowa State University, USA)

Technical Program: Tuesday, October 15 (cont)

13:45 - 15:15
T506: K-12 Computer Science Education
Session Chair: Nancy Ruzycki (University of Florida, USA)
Room: Fairchild

13:45
Learning Sequencing With Bee-Bot: A Study on Improving Computational Thinking and Motivation for Young Learners in Programming Education
Wan-Chong Choi (Macao Polytechnic University, Macao & CISUC, University of Coimbra, Portugal); Iek-Chong Choi (City University of Macau, Macao); Chan-Tong Lam (Macao Polytechnic University, Macao); António José Mendes (University of Coimbra & Dep. of Informatics Engineering, CISUC, Portugal)

14:00
Interdisciplinary TPACK: A Case Study Using Variables, I/O, and Loops with Graduate Teacher Candidates in a Methods Course
Paris Kalathas and Jennifer Parham-Mocello (Oregon State University, USA)

14:15
Understanding CTProgER's Impact on High School Students' Programming Learning
Isabelle Souza (Federal University of Paraiba, Brazil); Wilkerson L. Andrade and Lívia Campos (Federal University of Campina Grande, Brazil)

14:30
What Concepts of Computational Thinking are Being Effectively Used in K12 Education: A Systematic Mapping
Rodrigo Otavio Ribeiro Hagstrom and Leônidas O Brandão (University of São Paulo, Brazil); Calebe Macena Rezende (University São Paulo & Instituto Singularidades, Brazil); Anarosa A. F. Brandão (Universidade de São Paulo & Escola Politécnica, Brazil); Priscila Lima (Federal University of Goias, Brazil)

14:45
Understanding Computer Science Teacher Capacity: A Case Study of Wisconsin Public High Schools
Sujeeth Goud Ramagoni and Dennis Brylow (Marquette University, USA)

15:00
Fostering AI Literacy: A Survey of Student Perceptions and Effective Practices in K-12 Machine Learning
Aetesam Ali Khan Ashar, Cristal Pineda and Jiangjiang Liu (Lamar University, USA)

Technical Program: Tuesday, October 15 (cont)

13:45 - 15:15
T507: DEI for K-12 Education
Session Chair: Julie M. Smith (Institute for Advancing Computing Education, USA)
Room: Columbia 2

13:45 ***Introducing Multidisciplinary Engineering Technology and Programing for High School Students Through Summer Program***
Sujing Wang (Lamar University, USA); Stefan Andrei (Oregon Institute of Technology, USA); Qiang Xu (Lamar University, USA)

14:00
WIP: Bridging the Data Gap - Introducing Unplugged Data Science
Mariana Arboleda and Camilo Vieira (Universidad del Norte, Colombia); Jennifer L Chiu (University of Virginia, USA)

14:15
Comparing Research Foci (What) and Student Participation (Who) in Computing Education Research in the United Kingdom and United States
Monica M. McGill (Institute for Advancing Computing Education, USA); Isabella Gransbury and Sarah Heckman (North Carolina State University, USA)

14:30
Towards Incorporating Computational Thinking Skills Across the Curriculum
Donna DeMarco, Lisa Frye and Dylan Schwesinger (Kutztown University, USA)

14:45
WIP: Understanding the Production of Highly Qualified Computer Science Teachers in a Predominant Hispanic Community: Computer Science Undergraduate Students' Perceptions of Becoming a Teacher
Sanga Kim (The University of Texas at El Paso, USA); Xuemei Wang (UTEP, USA); Elsa Villa (The University of Texas at El Paso, USA)

Technical Program: Tuesday, October 15 (cont)

13:45 - 15:15
T508: Assessment for Undergraduate Students 2
Session Chair: Anjum Chida (Rice University, USA)
Room: Embassy

13:45
Assessing Climate Literacy in Engineering Undergraduate Students Through Simulation-Based Learning
Tugba Karabiyik (Purdue University, USA); Aparajita Jaiswal (Purdue University, West Lafayette, USA); Paul J Thomas (Purdue University, USA)

14:00
Post-Assessment Processes Given the Rise of Generative AI: Findings From the Literature
Crista Mohammed and Sean Rocke (The University of the West Indies, Trinidad and Tobago)

14:15
Testing Aids and Their Impacts in Engineering Education: An Early Look at a Scoping Review
David P O'Neill (Northwestern University, USA)

14:30
Early Experiences with Specifications Grading in Intro CS Courses
Stephen Edwards (Virginia Tech, USA); Manuel Perez-Quinones (UNC Charlotte, USA); Adrienne Decker (University at Buffalo, USA); Bob Edmison (Virginia Tech, USA); Audrey Rorrer (University of North Carolina at Charlotte & College of Computing and Informatics, USA); Anmol Shukla (Virginia Tech, USA)

14:45
Psychometric Analysis of Electric Circuit Concepts Diagnostic (ECCD) Basic Test Items: A Classical Test Theory Approach
Tamlyn Lahoud (University of Georgia, USA); Olanrewaju Paul Olaogun (Merrimack College, USA); Shiyu Wang, Nathaniel Hunsu, Adel Al Weshah and Kun Yao (University of Georgia, USA)

15:00
Assessing Faculty Perceptions of a Pass/Fail Grading Model in CS1
Mark Zarb, Tiffany Young, Jess McGowan, John NA Brown and Roger McDermott (Robert Gordon University, United Kingdom (Great Britain))

Technical Program: Tuesday, October 15 (cont)

13:45 - 15:15
T509: Writing for the IEEE Teaching Excellence Hub
Room: Columbia 3-4
Organizer: Steve E Watkins (Missouri University of Science and Technology, USA)

15:15 - 15:45
T600: Coffee Break
Room: Columbia NorthWest

15:45 - 17:15
T601: DEI for Graduate Education
Session Chair: Adrian Nat Gentry (Purdue University, USA)
Room: Columbia 1

15:45
Social Capital and Women in Computing: A Comparative Study Between Sweden and Bangladesh
Thom Kunkeler, Klara Hugo and Fatama Akter (Uppsala University, Sweden)

16:00
A Global Cybersecurity Embedded Course: Student Learnings and Curricular Design
Suzanna Schmeelk and Denise Dragos (St. John's University, USA)

16:15
WIP: Implementing the Rising Doctoral Institute: A Case Study in an R1 University of the US Northeast
Natali Huggins (Virginia Tech, USA); Juan M Cruz (Rowan University, USA & Unive, Colombia); Cynthia Howard-Reed and Lauren Griggs (Penn State, USA); Holly Matusovich (Virginia Tech, USA); Mayra Artiles Fonseca (Arizona State University, USA); Stephanie Adams (University of Texas Dallas, USA); Gwen Lee-Thomas (Quality Measures LLC & Old Dominion University, USA)

16:30
Exploring Academic Adjustment and Success Factors Among International Graduate Students in Engineering Disciplines Across U.S. Universities: A Meta-Synthesis
Jakia Sultana (University of Texas at El Paso, USA); Justice T Walker (The University of Texas at El Paso & ABC Learning Lab, USA)

16:45
Fab Lab-Based Learning and Gender Gap in North America
Pablo C Herrera (Universidad Peruana de Ciencias Aplicadas, Peru); Macarena Valenzuela-Zubiaur (Universidad Tecnológica Metropolitana, Chile); Vaneza Caycho (Universidad Nacional Federico Villarreal, Peru); MariLú Pineda-Gutierrez (Universidad Peruana de Ciencias Aplicadas, Peru)

Technical Program: Tuesday, October 15 (cont)

15:45 - 17:15
T602: Innovative Undergraduate Education
Session Chair: Zubaer Hossain (Texas A&M University, USA)
Room: Tenley Town

15:45
Developing Student's Skills and Competencies in the Field of Architecture, Engineering, and Construction (AEC) Industry 5.0 in Mexico
Juan G. Cristerna-Villegas, Juan Pablo Solís-Flores and Francisco Carlos Matienzo-Cruz (Tecnologico de Monterrey, Mexico); Silvestre Aguilera-Herrera (ESCALA GERENCIA, Mexico); Patricia Vazquez-Villegas (Tecnologico de Monterrey, Mexico)

16:00
WIP: Detecting Computing-Enabled Interdisciplinary Domains Using the MIDFIELD Data Set
Tim Ransom, Stephanie Damas and David M Boyer (Clemson University, USA)

16:15
WIP: Diversifying the Computing Workforce - Rapid Development of of Interdisciplinary Computing-Based Undergraduate Programs
Melody Moh (San Jose State University, USA); Rula Khayrallah (SJSU, USA); Wendy Lee (San Jose State University, USA); Teng-Sheng Moh (San José State University, USA); David S Taylor and Ching-Seh Wu (San Jose State University, USA)

16:30
DaVinci's Cube: Reframing Innovation
Lisa D. McNair, Thomas L. Martin and Benjamin Knapp (Virginia Tech, USA); Baibhav Nepal (The Virginia Tech Institute for Creativity, Arts, and Technology (ICAT), USA); James Mathai (Virginia Tech, USA); Termeh Rassi (Leonardo, USA)

16:45
WIP: Accelerating Growth of Non-Traditional Engineering Students Through a Holistic Ecosystem of Programs, Courses, Activities and Partnerships
Pamela A. M. Bogdan and Sergio Vargas (Ocean County College, USA)

17:00
Kaden's Car; An Interdisciplinary Project for Technology and Occupational Therapy Students
E Shirl Donaldson, PMP, Donna Case and Thiago Ferreira (University of Michigan Flint, USA)

Technical Program: Tuesday, October 15 (cont)

15:45 - 17:15
T603: PBL for Undergraduate Students
Session Chair: Francisco Medeiros (Federal Institute of Paraiba, Brazil)
Room: Rock Creek

15:45
A Novel Near-peer Mentoring Model Involving Doctoral Students in an Interdisciplinary Client-facing Project-based Learning Course
Arko Barman (Rice University, USA)

16:00
Integrating Project-Based Learning and Design Thinking: An Innovative Approach to Enhancing Hard and Soft Skills in Industrial Robotics Education
Jose Pinheiro Queiroz Neto and Marlos A. S. Rodrigues (IFAM, Brazil); Micila Pereira (Federal Institute of Amazonas, Brazil); Nelson Alexandre Gouvea (LG Electronics do Brasil, Brazil)

16:15
Toward Integrating Reeves' Autonomy Supportive Teaching Scale to Support Facilitator-Student Observation in a Problem Based Learning Environment
Andrew Olewnik and David Mawer (University at Buffalo, USA); Lisa Retzlaff (NC State University, USA)

16:30
Providing Technical Support to Sustain Student Motivation and Engagement in Software Engineering Project-Based Learning
Ahmad Daudu Suleiman (Rochester Institute of Technology, USA); David Shepherd (Louisiana State University, USA); Jan DeWaters, Yu Liu and Daqing Hou (Clarkson University, USA)

16:45
An Exploratory Comparative Study on the Impacts of Technical Support on Student Successes in Computing Project-Based Learning
Ahmad Daudu Suleiman (Rochester Institute of Technology, USA); Jan DeWaters, Daqing Hou and Yu Liu (Clarkson University, USA); David Shepherd (Louisiana State University, USA)

17:00
Iterative Computing-Based Service-Learning: A Case-Study Applied to Small Rural Organizations
Sherri Weitl-Harms (Creighton University, USA)

Technical Program: Tuesday, October 15 (cont)

15:45 – 17:15
T604: Undergraduate Competencies Development 1
Session Chair: Pedro Fonseca (University of Aveiro, Portugal)
Room: Shaw

15:45
What Do I Need to Learn? Computing Competence Described by Novice Students
Caroline Uppsäll (Uppsala University & Mälardalen University, Sweden); Aletta Nylén (Uppsala University, Sweden); Gordana Dodig-Crnkovic (Mälardalen University, Sweden)

16:00
WIP: Comparing Engineering and Humanities Student Approaches to Complex Problem Solving
Mengzhou Chen, Jhon Varon, Lori Czerwionka and Kirsten A Davis (Purdue University, USA)

16:15
WIP: Integrating Computational Thinking Into the Curricula to Bridge the Skill Gap in Engineering Education
Nasrin Dehbozorgi (Kennesaw State University, USA); Maysam Nezafati (Georgia Institute of Technology, USA); Mehdi Roopaei (University of Wisconsin - Platteville, USA)

16:30
The Progression of Competencies and Dispositions: How Do Software Engineers Stack Up?
Alison Clear (EIT, New Zealand); Tony Clear (Auckland University of Technology, New Zealand)

16:45
Investigating Computer Science Students Perceptions of Team Coaching
Vanessa Tudor and Dominik Dolezal (University of Vienna, Austria); Renate Motschnig (University of Vienna & Faculty of Computer Science, Austria)

17:00
Enhancing Research and Mentoring Skills in Engineering Education through a Mentoring Triad Model
Sakhi Aggrawal (Purdue University, USA); Aparajita Jaiswal (Purdue University, West Lafayette, USA)

Technical Program: Tuesday, October 15 (cont)

15:45 - 17:15
T605: AI/ML Learning Tools 5
Session Chair: Susmita Haldar (Fanshawe College and Western University, Canada)
Room: Gunston

15:45
A Hybrid Approach for Usability Evaluation of Learning Management Systems Using Machine Learning Algorithms
Richard Torres Molina (Whitman College, USA); Mohammed Seyam (Virginia Tech, USA)

16:00
Comparison of Large Language Models for Applied Mathematics Questions in Engineering Courses
Carlos Merlos and Faraz Hussain (Clarkson University, USA); Abd AlMomani (Embry-Riddle Aeronautical University, USA); Swati Kar, Lavanya Shri, Olaoluwayimika Olugbenle and Mahesh Banavar (Clarkson University, USA)

16:15
Implementing the LSEESC Methodology With AI-Guided Support for Active Learning in Engineering Physics Courses
Erika Cervantes Juárez and Daniel Sánchez Guzmán, Sr. (Instituto Politécnico Nacional, Mexico)

16:30
Generative and Custom Chatbots in Computer Engineering Education and Their Effectiveness: A Systematic Literature Review
Syed Hassan Tanvir and Gloria J Kim (University of Florida, USA)

16:45
Integrating Generative AI With Data Structures and Algorithm Analysis Course Homework
Cong Pu (Oklahoma State University, USA)

16:45
WIP: Innovative Practice: Incorporating ChatGPT Into Technical Writing Assignments in Chemical Engineering Education
Eleanor F Woolever and Stephanie G Wettstein (Montana State University, USA)

Technical Program: Tuesday, October 15 (cont)

15:45 - 17:15
T606: K-12 Cybersecurity Education
Session Chair: Harini Ramaprasad (University of North Carolina at Charlotte, USA)
Room: Fairchild

15:45
Bridging the Gap: Exploring Cybersecurity Careers for High School Students
Gahangir Hossain (University of North Texas, USA); Mikyung Shin (Illinois State University, USA); Mehnaz Afrose (West Texas A&M University, USA)

16:00
Fundamentals on Cyber Fraud Detection and Investigation: Empowering High School Students for a Secure Digital Future
Gahangir Hossain (University of North Texas, USA); Taylor Hurst (West Texas A&M University, USA); Mikyung Shin (Illinois State University, USA)

16:15
Cybersecurity Education in High School: Exploring Cyber Assets, Cyber Value at Risk, and Authentic Assessment
Prashant Vajpayee and Gahangir Hossain (University of North Texas, USA)

16:30
Evaluating and Boosting Cybersecurity Awareness With an AI-Integrated Mobile App
Nisha Thorakkattu Madathil and Meera Alalawi (UAE University, United Arab Emirates); Simon Kebede Darota (United Arab Emirates University, United Arab Emirates); Winner Abula (UAE University, United Arab Emirates); Saed Alrabaee (United Arab Emirates University, United Arab Emirates); Suhib Bani Melhem (UAE University, United Arab Emirates)

16:45
Empowering Future Cyber Defenders: Advancing Cybersecurity Education in Engineering and Computing with Experiential Learning
Muhusina Ismail (UAE University, United Arab Emirates); Saed Alrabaee (United Arab Emirates University, United Arab Emirates)

Technical Program: Tuesday, October 15 (cont)

15:45 - 17:15
T607: Pre-college Outreach
Session Chair: Deborah Moyaki (University of Georgia, USA)
Room: Columbia 2

15:45
WIP: Teaching Basic Concepts of Quantum Computing Using Scratch
Carlos Rosa-Remedios, Pino Caballero-Gil and Daniel Escanez-Exposito (University of La Laguna, Spain)

16:00
Block and Text Programming: What do students know on their first and last day of upper-secondary school?
Johan M Snider and Anna Eckerdal (Uppsala University, Sweden)

16:15
Development of Educational Modules to Empower High School and Undergraduate Students to Pursue Careers in Resilient Coastal Infrastructure
Luisa Feliciano-Cruz (UPRM, USA); Carla Lopez del Puerto (University of Puerto Rico - Mayaguez, USA); Ismael Pagan Trinidad, Raul Zapata Lopez and Alberto Figueroa (University of Puerto Rico - Mayaguez, Puerto Rico)

Session continued on next page

15:45 - 17:15
T607: Pre-college Outreach (continued from previous page)

16:30
WIP: Building an Education Ecosystem for Next Generation Microelectronics Experts in Green and Circular Economy with Digitally-Supported Teaching Methods for Sustainable Chips and Applications
Klaus Hofmann (TU Darmstadt, Germany); Ferdinand Keil (Technische Universität Darmstadt, Germany); David Riehl (TU Darmstadt, Germany); Alicja Michalowska-Forsyth and Nikolaus Czepl (Graz University of Technology, Austria); Sarah Woywod (TU Graz, Germany); Dominik Zupan (Graz University of Technology, Austria); Mario Roberto Casu, Carlo Ricciardi, Massimo Violante, Mariagrazia Graziano, Yuri Ardesi and Fabrizio Mo (Politecnico di Torino, Italy); Dominik Berger and Sabine Sill (BK Businesskonsens, Germany); Volker Visotschnig (BK Businesskonsens, Austria); Panagiota Morfouli (Grenoble INP-UGA, France); Liliana Prejbeanu (INP Grenoble, France); Katell Morin-Allory (University of GRENOBLE, France); Cyrille Chavet and Davide Bucci (INP Grenoble, France); Skandar Basrour (University of Grenoble-Alpes France, France); Nhu Huan Nguyen (CROMA Laboratory, France); Jean Christophe Crebier (Université Grenoble Alpes, France); Ernesto Quisbert, Christian Defelix and Isabelle Corbett-Etchevers (INP Grenoble, France); Johannes Sturm and Jens Peter Konrath (FH Kaernten, Austria); Ulla Birnbacher (University of Applied Sciences Carinthia, Austria); Thomas Klinger (Carinthia University of Applied Sciences, Austria); Wolfgang Werth (Carithia University of Applied Sciences, Austria); Jorge Fernandes (Instituto Superior Técnico / INESC, Portugal); Mirjana Tatalović (Koncar, Croatia); Marcelino Santos (Instituto de Engenharia de Sistemas e Computadores - Investigação e Desenvolvime, Portugal); Antonio Rubio (Technical University Catalunya, Spain); Alba Pagès-Zamora (Technical University of Catalonia & UPC, Spain); Josep Pegueroles (Universitat Politecnica de Catalunya - BarcelonaTech, Spain); Jordi Salazar (Universitat Politècnica de Catalunya, Spain); Beatriz Otero (Universitat Politécnica de Catalunya, Spain); Xavier Aragonés (UPC, Spain); Israel Martin Escalona (Universidad Politecnica de Cataluña, Spain); Aleix sole (UPC, Spain); Dunja Suttnig (Infineon Technologies Austria, Austria); Julia Calabro (Infineon Technologies Austria, Germany); Floriberto Lima (Silicongate, Portugal); Eric Jouseau (Akileo Foundations, France); François Cerisier and Cristian Rivier (Aedvices, France); Sepp Eisenriegler and Harald Reichl (RUSZ Vienna, Austria); Miroslav Macan, Dubravko Krušelj, Mladen Puškarić and Vinko Zeleničić (Koncar, Croatia); Bernd Deutschmann (Graz University of Technology, Austria); Juan Moreno (Technical University of Catalunya, Spain)

16:45
Cultural Relevance for Epistemic Practice in High School Computational Data Mining
Alex Acquah (The University of Texas at El Paso, USA); Amanda Barany (University of Pennsylvania, USA); Michael A. Johnson (University of North Texas, USA); Sayed Mohsin Reza (Pennsylvania State University Harrisburg & University of Colorado Denver, USA); Andi Scarola and Christopher Rivera (The University of Texas at El Paso, USA); Justice T Walker (The University of Texas at El Paso & ABC Learning Lab, USA)

17:00
WIP: Introducing Semiconductors in a High School Calculus Class: A Pilot Implementation
Haniye Mehraban, Andrew J Ash, Erin Dyke and John Hu (Oklahoma State University, USA)

Technical Program: Tuesday, October 15 (cont)

15:45 - 17:15
T608: Undergraduate Online Learning
Session Chair: Reza Rahdar (Embry Riddle Aeronautical University, USA)
Room: Embassy

15:45
Understanding Students' Motivation-Related Experiences in Different Learning Environments of Summer Engineering Courses
Vincent Fakiyesi, Isaac D Dunmoye, Joshua Dunlap, John R Morelock and Ramaraja Ramasamy (University of Georgia, USA)

16:00
Designing Presence and Place: A Framework for Engaging Student Interaction in Desktop Virtual World Learning Environments
Arghavan (Nova) Ebrahimi and Mary Lou Maher (University of North Carolina at Charlotte, USA)

16:15
Beyond the Bind and Between the Lines: Focus Group Insights Into an Interactive-Online Textbook
Lee A Dosse, David M. Pabst, Samantha E. Wismer and Matthew Barry (University of Pittsburgh, USA)

16:30
Managing Students in Hybrid Software Project Classes
Bruce Maxim and Belen Garcia de Hurtado (University of Michigan-Dearborn, USA)

16:45
Students Motivation to Learn Programming: A Systematic Review
Umer Farooq and Saira Anwar (Texas A&M University, USA)

17:00
Practical Implementation of Web-Based Hands-On System for Network Security Classes
Yuichiro Tateiwa (Nagoya Institute of Technology, Japan)

15:45 - 17:15
T609: Improving Interview Skills Using the Interview Quality Reflection Tool (IQRT)
Room: Columbia 3-4
Organizers: James Huff (University of Georgia, USA); Jerrod A Henderson (University of Houston, USA); Sindia Rivera-Jimenez (University of Florida, USA); Amy Brooks (University of Pittsburgh, USA)

Technical Program: Tuesday, October 15 (cont)

17:15 - 18:45
T701: Institutional Change for Graduate Education
Session Chair: Pedro Guillermo Feijoo Garcia (Georgia Institute of Technology, USA)
Room: Columbia 1

17:15
Mediation of Difficult Graduate Student and Faculty Discussions in Engineering and Science
Idalis Villanueva Alarcón (University of Florida, USA)

17:30
WIP: Graduate-Student Led Initiatives for Enhanced Safety Learning and an Improved Safety Culture in Engineering Departments
Ronald J Vogler and Isabelle L Williams (The University of Texas at Austin, USA); Ciara Noelle H. Smith (University of Texas at Austin, USA); Carlos J Landaverde Alvarado (The University of Texas at Austin, USA)

17:45
Shaping the Future of Engineering Education: Perspectives From the University Community on Innovative Teaching Practices
Mar Carrió, Sr. (Universitat Politècnica de Catalunya & Institute of Educational Sciences, Spain); Ramon Bragos (Universitat Politecnica de Catalunya, Spain); Montserrat Alsina (Universitat Politècnica de Catalunya-BarcelonaTech, Spain); Berta Bardi Mila, Antoni Hernández-Fernández, Joan Gispets Parcerisas and Oriol Buqueras Solsona (Universitat Politècnica de Catalunya, Spain)

18:00
A Plugin Campus for Computing in Africa: An Analysis of Five Years
Lannie Uwu-khaeb (University of Turku, Namibia); Vuyelwa David Ruwodo and Erkki Sutinen (University of Turku, Finland)

18:15
Convergent Systems Engineering: A Modular, Agile Master's Program for Multi-Scale Systems
Jon Wade (University of California, San Diego, USA); Hyoduk Shin (University of California San Diego, USA); Richard Gessner (University of California, San Diego, USA)

Technical Program: Tuesday, October 15 (cont)

17:15 - 18:45
T702: Computing Education for Undergraduate Students 1
Session Chair: Amalia Rusu (Fairfield University, USA)
Room: Tenley Town

17:15
Novice Students Explain: What is Computer Science?
Caroline Uppsäll (Uppsala University & Mälardalen University, Sweden); Aletta Nylén (Uppsala University, Sweden); Gordana Dodig-Crnkovic (Mälardalen University, Sweden)

17:30
Categorical Variable Coding for Machine Learning in Engineering Education
Alvin Tran, Christian Zuniga Navarrete, Luis Segura Sangucho, Arinan Dourado and Xiaomei Wang (University of Louisville, USA); Campbell R. Bego (University of Louisville & J. B. Speed School of Engineering, USA)

17:45
A Toolkit for Promoting a Learning Innovation Safe Space (LISS) in Computing Higher Education
Lívia Silva Oliveira (Federal University of Pernambuco, UFPE, Brazil); Cristiano Araujo (Federal University of Pernambuco, UFPE); Leonardo Gomez Castillo (Federal University of Pernambuco, UFPE, Brazil)

18:00
Embedding Blockchain Concepts Into Common Computer Science Courses
Karol Lejmbach, Despoina (Debbie) Perouli and Marta Magiera (Marquette University, USA)

18:15
Interview Iterations and Improvements for Identifying Intermediate Computer Science Threshold Concepts
Sean Mackay (University at Buffalo, USA); Brian M. McSkimming (University of Oklahoma, USA); Adrienne Decker (University at Buffalo, USA)

18:30
WIP: Automated Flexible Extensions for Improving Learning Equity in Large Scale Computing Classrooms
Dana Benedicto, Jordan Schwartz, Narges Norouzi and Lisa Yan (University of California, Berkeley, USA)

Technical Program: Tuesday, October 15 (cont)

17:15 - 18:45
T703: Curriculum & Course Development for Undergraduate Students 1
Session Chair: Yasser Alshehri (Yanbu Industrial College, Saudi Arabia)
Room: Rock Creek

17:15
Understanding Student Perceptions of Project Impact in the EPICS in IEEE Service-Learning Program
Stephanie M. Gillespie (University of New Haven, USA); Steve E Watkins (Missouri University of Science and Technology, USA); Ashley F. Moran (EPICS in IEEE, USA)

17:30
Approaching Convergence From an Undergraduate Engineering Perspective
Michael S. Thompson and R. Alan Cheville (Bucknell University, USA); Sarah Appelhans (Lafayette College, United States of America, USA); Stewart Thomas and Rebecca L Thomas (Bucknell University, USA); Philip Asare (University of Toronto, Canada)

17:45
Exploring the Impact of Service Learning Internships on Professional Skills Development in Engineering Students: A Scoping Review
Javier E. Bermúdez (Escuela Superior Politécnica del Litoral, ESPOL & Ghent University, Ecuador); Katherine Chiluiza (ESPOL, Ecuador); Tammy Schellens and Martin Valcke (Ghent University, Belgium)

18:00
WIP: Boosting CS Freshmen: The Impact of Summer Bridge Programs on Academic Success and Attitudes
Shreya Gupta and Narges Norouzi (University of California, Berkeley, USA)

18:15
Pay It Forward: Use of a Course-Based Discussion Platform to Deepen Content and Professional Knowledge in an Engineering Project Course
Edward Latorre (University of Florida, USA)

18:30
Leveraging Cost-Effective Custom Tensile Testing Apparatus for Improved Understanding of Stress and Strain Principles
Shadi Balawi (Texas A&M University, USA); Naveen Thomas (Texas A M University, USA); Zubaer Hossain (Texas A&M University, USA)

Technical Program: Tuesday, October 15 (cont)

17:15 - 18:45
T704: Gamification for K-12 Students
Session Chair: Sathish Akula (Florida Polytechnic University, USA)
Room: Shaw

17:15
Crafting Personalized Learning Environments Through Motivational Profiling
Sergio A. A. Freitas (University of Brasilia, Brazil); Mylena A. S Farias (University of Brasília, Brazil); Cristiane Soares Ramos (Universidade de Brasília, Brazil); Marcus V. P. Martins (Universidade de Brasília & CEDIS, Brazil); Juan Mangueira Alves (University of Brasilia, Brazil); Leda Sampson (IBICT, Brazil)

17:30
VPET: A Novel Visual Privacy Themed Cybersecurity Educational Game
Ankur Chattopadhyay, Saumya Sharma and James Rice (Northern Kentucky University, USA); Elisee Mbaya (Powers-HVAC, USA)

17:45
Challenges and Strategies in Integrating Game Design in Education: A Systematic Literature Review
Raimundo Nonato Bezerra Neto and Eduardo Aranha (Federal University of Rio Grande do Norte (UFRN), Brazil)

18:00
The Effects of Gamification on Students' Gameful Experience According to Their Gender: A Quasi-Experimental Study
Luiz Oliveira da Silva Junior (Universidade Federal da Paraíba, Brazil); Wilk Oliveira and Juho Hamari (Tampere University, Finland); Marcelo Hatugai (Federal Institute of Education, Science and Technology of São Paulo, Brazil); Pasqueline Dantas (Federal University of Paraiba, Brazil)

18:15
Innovative Approach to Enhancing STEM Skills Through Educational Games: Work in Progress
Martina Holenko Dlab, Bojan Crnkovic, Ivona Traunkar and Vedrana Mikulic Crnkovic (University of Rijeka, Croatia)

Technical Program: Tuesday, October 15 (cont)

17:15 - 18:45
T705: AI/ML Learning Tools 6
Session Chair: Zubaer Hossain (Texas A&M University, USA)
Room: Gunston

17:15
Anti-Ableist Approach to AI Identity: How to Move Towards the Centering of Accessibility in AI Development
Sri Yash Tadimalla (University of North Carolina at Charlotte, USA); Rachel Figard (Arizona State University, USA); Yukyeong Song (University of Florida, USA)

17:30
A Systematic Evaluation of Code-Generating Chatbots for Use in Undergraduate Computer Science Education
Adam Torek, Elijah Sorensen, Natlie Hahle and Casey Kennington (Boise State University, USA)

17:45
AI Can Help Instructors Help Students: An LLM-Supported Approach to Generating Customized Student Reflection Responses
Sandra Wiktor, Mohsen Dorodchi and Nicole Wiktor (University of North Carolina at Charlotte, USA)

18:00
Visualizing Program Behavior: A Study of Enhanced Program Diagrams Using LLM
Ying Li (Beijing University of Aeronautics and Astronautics, China)

18:15
Peer-to-Peer Interpretability and Communication: Simple Language Design Using Model-Based Systems Engineering with Lifecycle-Oriented Strategies and Innovative Practices for Career Readiness
Lena Spiller, Bede Nnebedum, Willie L. Brown, Jr, I Dabipi, Lei Zhang, Etahe Johnson, Weiwei Stone, Dinesh Sharma, Lanju Mei, Cynthia Cravens, LaKeisha Harris, Theresa Queenan, Urban Wiggins and Jason Cornelius (University of Maryland Eastern Shore, USA); Rasheed Graham (Norsou360, USA); Tiara Cornelius (University of Maryland Eastern Shore, USA); Marea de Koning (Tampere University, Finland); Roland Wescott, Enrique Jackson and Laurence Price-Webb (National Aeronautics and Space Administration, USA)

18:30
Platform to help CNN training in manufacturing teaching environments
Thiago Rodrigo Monteiro Salgado and Mattheus Smith Costa Fernandes (Federal University of Amazonas, Brazil); Guido Soprano Machado (FIT - Flex Technology Institute, Brazil); Vicente F. Lucena, Jr. (Federal University of Amazonas, Brazil)

Technical Program: Tuesday, October 15 (cont)

17:15 - 18:45
T706: Electrical Engineering Education
Session Chair: Kamel Alboaouh (Norfolk State University, USA)
Room: Fairchild

17:15
Exploring Curriculum Design for Introductory Electrical Engineering Subjects: A WIP Review of the Australian Context
Matheus S. Xavier (University of Melbourne, Australia); Shannon A. Rios (The University of Melbourne, Australia)

17:30
WIP: Faculty Adoption Over Time to Online Laboratories in Electrical and Computer Engineering Classes Throughout COVID-19
Landon Smith, Varun Kathpalia, Dominik May and Nathaniel Hunsu (University of Georgia, USA)

17:45
Factors Influencing Researcher Identities in Minority Gender Students in Electrical Engineering
Leah Espenhahn, Erin Raftery, Mei-Yun Lin, Hsinju Chen and Holly Golecki (University of Illinois Urbana-Champaign, USA)

18:00
Junior Design for Electrical and Computer Engineers: A Novel Course for Discipline-Specific Instruction of the Engineering Design Process
Samuel J Dickerson and Renee Clark (University of Pittsburgh, USA)

18:15
Innovative Competency-Based Electrical Engineering Curriculum
Gustavo P. Rehder (University of São Paulo & Universidade de São Paulo, Brazil); Ariana Serrano (University of São Paulo, Brazil); Jose Baesso Grimoni, Sr (Universidade de Sao Paulo, Brazil); Anarosa A. F. Brandão (Universidade de São Paulo & Escola Politécnica, Brazil); Magno T. M. Silva (University of Sao Paulo, Brazil); Henrique Moriya and Cristiano M. Panazio (University of São Paulo, Brazil); Edson Barbero (FECAP, Brazil); Marco I Alayo (University of Sao Paulo, Brazil); Irineu G. N. Gianesi (Instituto Mauá de Tecnologia, Brazil); Antonio Seabra (Universidade de São Paulo, Brazil)

Technical Program: Tuesday, October 15 (cont)

17:15 - 18:45
T708: Assessment for Undergraduate Students 3
Session Chair: Mireilla Bikanga Ada (University of Glasgow, UK)
Room: Columbia 2

17:15
A Systematic Approach for Outcome--Based Assessment
Fethi Belkhouche (Shippensburg University, USA)

17:30
Experience Implementing an Automated Assessment System for Accreditation
Stephen W Turner (University of Michigan-Flint, USA); Tyler E Judd (University of Michigan - Flint, USA); Suleyman Uludag (The University of Michigan - Flint, USA)

17:45
The Use of Formula Sheets in Engineering Exams: An Analysis of Impact on Student Performance and Learning Strategies
Surupa Shaw (MTDE, Texas A&M University & Texas A&M University, USA); Saul Gracia Vela (Texas A&M University, USA)

18:00
A Software Framework Based on JUnit for Automated Software Testing in Computer Science Courses
Michael A Zmuda (Miami University, USA)

18:15
WIP: A Directed Graph Approach to Connecting and Assessing Critical Thinking and Problem-Solving in Engineering Education
Jaclyn Johnson, CK Choi, Radheshyam Tewari and Aneet Dharmavaram Narendranath (Michigan Technological University, USA)

18:30
Expert Feedback on Sketching Self-Efficacy Instrument
Donna Jaison (TAMU, USA); Hillary E. Merzdorf (Cornell University & eCornell, USA); Karan Watson and Tracy Hammond (Texas A&M University, USA)

Technical Program: Tuesday, October 15 (cont)

17:15 - 18:45

T709: Calling All Voices: Transforming Scholarly Perception of an Entrepreneurial Mindset Framework Through a Community-Led Delphi Study

Room: Columbia 3-4

Organizers: Cheryl Bodnar (Rowan University, USA); Samantha Brunhaver (Arizona State University, USA); Adam R Carberry (The Ohio State University, USA); Prateek Shekhar (New Jersey Institute of Technology, USA); Alexandra M Jackson (Rowan University, USA); Sanjeev M Kavale (Arizona State University, USA); Brendan Rucci (Rowan University, USA)

18:45 - 20:00

T800: Reviewer Appreciation Drink Reception

Room: Heights Courtyard

Technical Program: Wednesday, October 16

7:00 – 17:00
Registration
Room: Terrace Foyer

7:30 - 8:00
W100: Continental Breakfast
Room: Columbia NorthWest

8:00 - 9:30
W101: Undergraduate Research Experience 1
Session Chair: Anjum Chida (Rice University, USA)
Room: Columbia 1

8:00
Exploring How Mechanical Engineering Undergraduate Researchers' Understanding of Research Change Over Time
Nosakhare I Idiaghe (University of Nebraska-Lincoln, USA); Mitra Panahi and Jessica R Deters (University of Nebraska - Lincoln, USA)

8:15
The Graduate Student Role in Undergraduate Research Mentoring: Theoretical Perspectives
Christina A. Pantoja and Anastasia Rynearson (Campbell University, USA)

8:30
Global Engineering Skills Development during an International Research Experience
Andrea Schuman, David Knight, Nicole Sanderlin and Christine Burgoyne (Virginia Tech, USA)

8:45
A Study on Undergraduate Engineering Research
Kleio Avrithi (Marian University, USA); Dionyssia Clagett (Georgetown University, USA)

9:00
Characterizing Research Self-Efficacy Among Undergraduate Engineering Students
Brainerd Prince (Plaksha University, India); Aparajita Jaiswal (Purdue University, West Lafayette, USA); Vinayak K Joshi (Plaksha University, India)

9:15
Work-In-Progress: Course-Based Undergraduate Research Experiences (CURE) With Generative AI in a Computer Science Course
Paula Lauren (Lawrence Technological University, USA)

Technical Program: Wednesday, October 16 (cont)

8:00 - 9:30
W102: Computing Education for Undergraduate Students 2
Session Chair: Sangit Sasidhar (National University of Singapore, Singapore)
Room: Tenley Town

8:00
A Data-Driven Approach for Engineering Degree Programme Review Based on Graph Theory
Chao Shu, Yue Chen and Kok Keong Chai (Queen Mary University of London, United Kingdom (Great Britain))

8:15
Modern Detection Methods for AI-Generated Plagiarism in Programming Courses: A Literature Mapping
Maristela Holanda (University of Brasilia, Brazil); Dilma Da Silva (TAMU, USA); Archer Simmons (Texas A&M University, USA); Christiana Chamon (TAMU, USA)

8:30
Challenging and Transforming Computing Education for Future K-12 Teachers
Elaine Hampton (University of Texas at El Paso, USA); Christopher Villa (Helix Solutions, USA); Leilani Luna (UTEP, USA); Mary Roy (University of Texas at El Paso, USA); Randy Taylor (Helix Solutions, USA); Elsa Villa (The University of Texas at El Paso, USA)

8:45
WIP: Common Programming Mistakes by Students in an Introductory Embedded Systems Course
Juno Robertson, Fana Teffera and Diane Rover (Iowa State University, USA)

9:00
Emulating Real World SE Practices in Computer Science Classrooms
Tajmilur Rahman and Sirapa Malla (Gannon University, USA)

9:15
WIP: Leveraging Static Code Analysis for Peer Code Review in Computer Science Education
Raz Landau (Yeshayahu 19, Israel); Amir Rubinstein (Tel Aviv University, Israel)

Technical Program: Wednesday, October 16 (cont)

8:00 - 9:30
W103: Mechanical Engineering Education
Session Chair: Radheshyam Tewari (Michigan Technological University, USA)
Room: Rock Creek

8:00
PlatROB: A Low-Cost Modular Platform for Teaching Mobile Robotics and AI to Undergraduate Mechatronic Engineering Students
Julio Sinche, Jimm Cisneros and Diego Arce (Pontificia Universidad Católica del Perú, Peru); Jose Balbuena (Pontificia Universidad Catolica del Peru, Peru); Elizabeth Villota (Pontificia Universidad Católica del Perú, Peru)

8:15
Supporting Student Understanding of Finite Element Analysis and Computational Science: Classroom Scaffolding and ChatGPT
Camilo Vieira (Universidad del Norte, Colombia); David Restrepo (The University of Texsas at San Antonio, USA); Jose L. De La Hoz (Universidad del Norte, Colombia)

8:30
Understanding the Effect of Scaffolding on Introductory Ill-Defined Problems in Engineering Education
Katelyn M Churakos, Ella Markham, Jessica Swenson and Alice Nightingale (University at Buffalo, USA)

8:45
Every Click You Make, Every Break You Take, We'll Be Watching You
David M. Pabst, Lucas J. Zwastetzky, Kristian A. Borysiak, Lee A Dosse and Matthew Barry (University of Pittsburgh, USA)

9:00
Software Integrated Instruction of Solid Mechanics
Zubaer Hossain and Shadi Balawi (Texas A&M University, USA)

Technical Program: Wednesday, October 16 (cont)

8:00 - 9:30
W104: Gamification for Undergraduate Students 1
Session Chair: Sana Algaraibeh (New Mexico Institute of Mining and Technology, USA)
Room: Shaw

8:00
Developing and Assessing a Customizable Educational Game
Donovan C Benson and Jinghua Zhang (Winston-Salem State University, USA)

8:15
WIP: Beyond the Classroom - Mystery Games as a Portal to SQL Proficiency
Sherif Abdelhamid (Virginia Military Institute, USA); Jacob Enfield, Vadapalli Swetha Annapoorna and Ajay Kumar Addike (George Mason University, USA)

8:30
Finances, Financial Literacy and Social Well-being: Addressing the problem through gamification, game-based learning, and artificial intelligence (AI)
Trina Fletcher, Joaquin Molto and Isabel Guitton (Florida International University, USA); Destiny Washington (The Gold Horizon, USA)

8:45
WIP: For the Love of the Game: Exploring Student Motivation in Game-Based Learning Environments
Alexa Deeter, Khue Pham, Jen L Sundstrom, Grant Goodall, Alexander Qazilbash 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)

9:00
Fostering Agile IT Project Management and Interpersonal Skills Using AI-Enhanced Game-Based Learning
Dominik Dolezal, Yllka Velaj and Lukas Spreitzer (University of Vienna, Austria); Claudia Plant (University of Vienna & DS UniVie, Austria)

9:15
WIP: Investigating Students' Emotions and Motivations in a Game-Based Learning Environment
Alexa Deeter, Grant Goodall, Khue Pham, Jen L Sundstrom, Alexander Qazilbash 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)

Technical Program: Wednesday, October 16 (cont)

8:00 - 9:30
W105: AI/ML Learning Tools 7
Session Chair: Reza Rahdar (Embry Riddle Aeronautical University, USA)
Room: Gunston

8:00
A PBL-Based Mini Course Module for Teaching Computer Science Students to Utilize Generative AI for Enhanced Learning
Venkata Alekhya Kusam, Summit Shrestha and Khalid Kattan (University of Michigan at Dearborn, USA); Bruce Maxim (University of Michigan-Dearborn, USA); Zheng Song (University of Michigan at Dearborn, USA)

8:15
Misconceptions, Pragmatism, and Value Tensions: Findings from a Study of Technology Students' Use and Perceptions of Generative AI for Education
Aditya Johri and Ashish Hingle (George Mason University, USA); Johannes Schleiss (Otto von Guericke University Magdeburg, Germany)

8:30
Enhancing Education for Deaf People: A Systematic Review of NLP Strategies for Automatic Translation From Portuguese to Brazilian Sign Language
Andrew Flores Brongar, Sr (Federal University of Rio Grande, Brazil); Jordan Zitzke Pinho (Universidade Federal Do Rio Grande, Brazil); Gisele M Simas (Federal University of Rio Grande (FURG), Brazil); Regina Barwaldt (Federal University of Rio Grande (FURG), Brazil & Center of Computational Sciences (C3), Brazil)

8:45
Hobots: A Remote Teaching Method for Collaborating in the Robotics Learning Process
Wollace Souza, S (Federal University of Amazonas - UFAM, Brazil); Guido Soprano Machado (FIT - Flex Technology Institute, Brazil); Marenice M Carvalho (Federal University of Amazonas, Brazil); Claudia Monteiro da Silva (Universidade Federal Do Amazonas, Brazil); Renan Landau Paiva de Medeiros (Federal University of Amazonas - UFAM & Federal University of Amazonas, Brazil); Vicente F. Lucena, Jr. (Federal University of Amazonas, Brazil)

9:00
Reimagining AI Conference Mission Statements to Promote Inclusion in the Emerging Institutional Field of AI
Tammy Mackenzie (Norwegian University of Science and Technology (NTNU), USA); Sreyoshi Bhaduri (Society of Women Engineers, USA); Leslie Salgado (University of Calgary, Canada); Peer Herholz (Northwestern University, USA); Zachary Rosenthal (Polyaula, Canada); Rubaina Khan (University of Toronto, Canada); Animesh Paul (University of Georgia, USA); Debarati Basu (Embry-Riddle Aeronautical University, USA)

Technical Program: Wednesday, October 16 (cont)

8:00 - 9:30
W106: Undergraduate Laboratory Learning
Session Chair: Ben Clark (Freed-Hardeman University, USA)
Room: Fairchild

8:00
How Recent Graduates Perceive Some of the Preliminary Concepts in Electrical Engineering
Kamel Alboaouh (Norfolk State University, USA)

8:15
An Innovative Approach to Automatically Help Activities Corrections in Remote Laboratories in the Mechatronics Area Using Intelligent Digital Twins
Guido Soprano Machado (FIT - Flex Technology Institute, Brazil); Claudia Monteiro da Silva (Universidade Federal Do Amazonas, Brazil); Marenice M Carvalho (Federal University of Amazonas, Brazil); Wollace Souza, S (Federal University of Amazonas - UFAM, Brazil); Renan Landau Paiva de Medeiros (Federal University of Amazonas - UFAM & Federal University of Amazonas, Brazil); Vicente F. Lucena, Jr. (Federal University of Amazonas, Brazil)

8:30
Integrating Personalized AI-Assisted Instruction Into Remote Laboratories: Enhancing Engineering Education With OpenAI's GPT Models
Rania Hussein, Zhiyun Zhang, Pedro Amarante and Nate Hancock (University of Washington, USA); Pablo Orduña (LabsLand, USA); Luis Rodriguez-Gil (LabsLand, Spain)

8:45
Innovations in an Undergraduate Laboratory to Increase Engagement
Amir Saeidi (University of California, Davis, USA); James C Earthman (UC Irvine, USA)

9:00
A Guided Comparison of Bioinstrumentation Laboratory Data Analysis Using Mathematical Software and Generative AI
Hannah Kimmel, Maya Miriyala, Kaitlyn Tuvilleja, Megha Agrawal, Hanwen Liang and Rebecca M. Reck (University of Illinois Urbana-Champaign, USA)

Technical Program: Wednesday, October 16 (cont)

8:00 - 9:30
W107: Capstone Education 1
Session Chair: Ben Clark (Freed-Hardeman University, USA)
Room: Columbia 2

8:00
Evaluating Individual Contributions in Teams for Project-Based Learning in Data Science
Arko Barman and Su Chen (Rice University, USA); Genevera Allen (Columbia University, USA)

8:15
Enhancing Career Preparedness Through a Software Engineering Capstone Course Design
Hyo Jung Song, Jingyi Wang, Andrew Dahlstrom and Rafael Sunico (San Francisco State University, USA)

8:30
Transforming the Client Relationship to Support Large Capstone Classes
Bowen Hui, Samantha Hodge and Dilpreet Samra (University of British Columbia, Canada)

8:45
Evaluating the Role of Transdisciplinary Course Design and Its Efficacy in Teaching a Personal Communication Course for Engineering Students
Brainerd Prince, Rukmani Keshav and Anenya Kez (Plaksha University, India)

9:00
Guiding Principles for Assessing Software Engineering Teams
Bowen Hui (University of British Columbia, Canada)

9:15
Maximizing Individual Learning Goals Through Customized Student-Project Matching (SPM) in CS Capstone Projects
Jason L Weber and Barbara Martinez Neda (University of California, Irvine, USA); Sergio Gago-Masague and Jennifer Wong-Ma (University of California Irvine, USA)

Technical Program: Wednesday, October 16 (cont)

8:00 - 9:30
W108: Computer Science Education
Session Chair: Jeffrey J. Yackley (University of Michigan – Flint, USA)
Room: Embassy

8:00
WIP: Exploring the Role of Sentiment in Tutor-Student Interaction. the Case Study of CS and Architecture Formative Studio Critiques
Hadas Sopher (Ariel University, Israel); Chen Hajaj (Ariel University & Data Science and Artificial Intelligence Research Center, Israel); John Gero (University of North Carolina at Charlotte, USA)

8:15
Concept Maps for Computer Organization: A Systematic Study
Fethi Belkhouche (Shippensburg University, USA)

8:30
WIP: An Interpretive Phenomenological Analysis of Computer Science Undergraduate Student Professional Identity Development
Tim Ransom and David M Boyer (Clemson University, USA); James Huff (University of Georgia, USA)

8:45
Building Bridges: A Holistic Approach to Web Development Education Through Community Engaged Learning and Social Justice Initiatives
Amalia Rusu (Fairfield University, USA); Adrian Rusu (University of New Haven, USA)

9:00
Innovative Practice: Agile Training for Year-Long Capstone Project
William Eberle, Gerald Gannod and Eric Brown (Tennessee Technological University, USA)

8:00 - 9:30
W109: Smartness as a Fundamental Component of Engineering Classrooms and Culture: Translating Research to Practice
Room: Columbia 3-4
Organizers: Rachel L. Kajfez, Amy Kramer and Emily Dringenberg (The Ohio State University, USA)

9:30 - 10:30
FIE Steering Committee (Closed Meeting)
Room: Van Ness

9:30 - 10:30
W200: Coffee Break
Room: Columbia NorthWest

Technical Program: Wednesday, October 16 (cont)

10:30 - 12:00
W201: Undergraduate Research Experience 2
Session Chair: Jennifer Leijon (Uppsala University, Sweden)
Room: Columbia 1

10:30
WIP: Building a Research Experience for Undergraduates in Quantum Machine Learning
Jean Larson (Arizona State University, USA); Glen Uehara and Leslie Miller (Arizona State University & SenSIP Center, USA); Tanay Kamlesh Patel (Arizona State University, USA); Deep Pujara (Arizona State University & SenSIP Center, USA); David Ramirez (ASU, USA); Andreas Spanias (ASU / SenSIP Center / School of ECEE, USA); Niraj Babar (ASU, USA)

10:45
Strategies and Considerations for Starting an Undergraduate Research Lab as a New Faculty at a PUI
Samantha G. Hoang, Anthony Bui and Parth Achwal (Seattle University, USA)

11:00
Application of 3D Printing and Design in Healthcare: A Focus on Undergraduate Research to Attract Students to Bioengineering and Related Disciplines
Cindy Maribel Zelada Quiroz (University of Puerto Rico-Mayaguez, USA); Brian Lee Reyes Santiago (University of Puerto Rico at Mayagüez, USA); Eduardo Ortiz-Rivera (University of Puerto Rico-Mayaguez, Puerto Rico)

11:15
Undergraduate Research on Optimization to Learn the Minimization of Transmission Power Losses on DC Microgrids
Juliana I Castrodad-Garcia (University of Puerto Rico - Mayaguez, Puerto Rico); Eduardo Ortiz-Rivera and Guillermo Lopez-Cardalda (University of Puerto Rico-Mayaguez, Puerto Rico)

11:30
Strengthening CS Research Capacity of Undergraduate Hispanic Students Through the Local REU Model
Ann Gates (University of Texas at El Paso, USA); Sanga Kim (The University of Texas at El Paso, USA); Heather Thiry (University of Colorado Boulder, USA); Sarah Hug (Colorado Evaluation and Research Consulting, USA); Elsa Villa (The University of Texas at El Paso, USA)

11:45
Increasing Accessibility to Undergraduate Research: A Semester-Long, Course-Based Research Model to Enhance the Engineering Classroom
Whitney Q Lohmeyer (Olin College of Engineering & FCC, USA); Kaitlyn Fleming (Olin College, USA)

Technical Program: Wednesday, October 16 (cont)

10:30 - 12:00
W202: Computing Education for Undergraduate Students 3
Session Chair: Susmita Haldar (Fanshawe College and Western University, Canada)
Room: Tenley Town

10:30
MILAGE LEARN+: Motivation and Grade Benefits in Computer Science University Students
Audrey Dorin and Marcia Moraes (Colorado State University, USA); Mauro Figueiredo (University of Algarve, Portugal)

10:45
WIP: Visualizing Success: An AI-Enhanced Interactive Conceptual Timeline for First-Generation Computer Science Students
Anna Baynes and Haiyan Liao (California State University, Sacramento, USA)

11:00
WIP: Technical Interview Preparation Initiative: Promoting Faculty Awareness and Intervention With Computing Majors
Edward C. Dillon, Jr. (University of Maryland, Baltimore County, USA); Kinnis Gosha (Morehouse College, USA); Krystal L. Williams (University of Georgia, USA); John J. Porter III (Morehouse College, USA); Portia Smith (KARAT, USA)

11:15
Sense-Making Frameworks in Computing Education
Roger McDermott (Robert Gordon University, United Kingdom (Great Britain)); Mats Daniels (Uppsala University, Sweden); Stephen T Frezza (Franciscan University of Steubenville, USA)

11:30
WIP: An Elective Subject on Education in a Bachelor's Degree in Computing
David Lopez (Universitat Politècnica de Catalunya - BarcelonaTech, Spain); Raúl López Sánchez (Universitat Politècnica de Catalunya, Spain)

11:45
Introducing Green Computing and Sustainable Software Development in Computer Engineering Curricula
Amr Hassan (University of Pittsburgh, USA); Mohamed Zaghloul (The University of Pittsburgh, USA)

Technical Program: Wednesday, October 16 (cont)

10:30 - 12:00
W203: Curriculum & Course Development for Undergraduate Students 2
Session Chair: Olof Lindahl (Uppsala University, Sweden)
Room: Rock Creek

10:30
Exploration and Practice of Laser Creative Product Design Course
Zhilong Li, Zhibo Sun, Zhiwen Hu and Wenshuo Ma (Beihang University, China); Lei Zhao (Beihang University, Croatia)

10:45
Assessing the Significance of Resnik's 4P Framework in Curriculum Development of the Personal Communication Course for Engineering Students
Brainerd Prince (Plaksha University, India); Mhonbeni E E Humtsoe (Plaksha University Punjab, India)

11:00
WIP: Teaching Advanced PCB Design in a Collaborative, Project-Based Learning Approach
Sebastian Zisch (Technical University Darmstadt, Germany); David Riehl and Klaus Hofmann (TU Darmstadt, Germany); Ferdinand Keil (Technische Universität Darmstadt, Germany)

11:15
Towards a Georgia Tech Semiconductor Experience for Underclassmen
William L Schaffer (Georgia Institute of Technology, USA); Bruno Frazier (Gatech, France); Azad Naeemi and Ajeet Rohatgi (Georgia Institute of Technology, USA)

11:30
WIP: Towards Human-Centered Engineering: Integrating Engineering Psychology Early in the Engineering Curriculum Through General Education
Kelly S Steelman (Michigan Tech, USA)

11:45
Advancing Technical Education at IFAM: Real-World Application and Impact of NB-IoT Integration on Developing Future-Ready Skills
Diego Sales (Federal University of Amazonas & Institute Federal of Amazon, Brazil); Gilbert Martins (Instituto Federal de Educação, Ciência e Tecnologia Do Amazonas, Brazil); Hillermann F. O. Lima (IFAM, Brazil)

Technical Program: Wednesday, October 16 (cont)

10:30 - 12:00
W204: Gamification for Undergraduate Students 2
Session Chair: Harini Ramaprasad (University of North Carolina at Charlotte, USA)
Room: Shaw

10:30
Implementing Neuroscientific Principles in Gamified Software Engineering Courses
Sergio A. A. Freitas (University of Brasilia, Brazil); Cristiane Soares Ramos (Universidade de Brasília, Brazil); Eduardo Bessa Pereira da Silva, Marcia Renata Mortari and Dianne Magalhaes Viana (University of Brasilia, Brazil)

10:45
WIP: Engaging Engineering Education: A Gamification-Based Learning Approach
Navid Zare and Atousa Hajshirmohammadi (Simon Fraser University, Canada)

11:00
Observing Undergraduate Students' Emotions in Gamified and Non-Gamified Educational Systems: A Qualitative Case Study
Pasqueline Dantas (Federal University of Paraiba, Brazil); Wilk Oliveira, Juho Hamari, Seyedhasan Mirhosseini and Andrea Brambilla (Tampere University, Finland)

11:15
WIP - Application of Serious Games in a University Industrial Related Laboratory Working With Collaborative Robots
Álvaro de Azevedo Peres Neto (Federal University of Amazonas & Fundação Paulo Feitoza - FPF Tech, Brazil); Fábson Gomes Nepomuceno (Federal University of Amazonas, Brazil); Wollace Souza, S (Federal University of Amazonas - UFAM, Brazil); Guido Soprano Machado (FIT - Flex Technology Institute, Brazil); Renan Landau Paiva de Medeiros (Federal University of Amazonas - UFAM & Federal University of Amazonas, Brazil); Vicente F. Lucena, Jr. (Federal University of Amazonas, Brazil)

11:30
Interdisciplinary Project-Based Learning: An Experience With Digital Games and Music Production Students
Claudio Carvilhe and Glaucio Moro (Pontifícia Universidade Católica do Paraná, Brazil); Anderson H Vermonde (Pontifícia Universidade Católica Do Paraná (PUCPR), Brazil); Jose Geraldo L Noronha Filho (Pontifícia Universidade Católica Do Paraná & Minhorta, Brazil); Carlos Silla (Halmstad University, Sweden & Pontificia Universidade Católica do Paraná, Brazil)

11:45
P4Checkers: Exploring Modern Network Concepts Through a Classic Game
Lucas Trombeta, Dener Silva, Bruna Cunha de Carvalho and Felipe Augusto Anon da Silva (Federal University of ABC, Brazil); João Henrique Kleinschmidt (Universidade Federal Do ABC, Brazil); Carlos Alberto Kamienski (Universidade Federal do ABC, Brazil)

Technical Program: Wednesday, October 16 (cont)

10:30 - 12:00
W205: Mental Health for Undergraduate Students
Session Chair: Anjum Chida (Rice University, USA)
Room: Gunston

10:30
Exploring Undergraduate Engineering Students' Definitions of Mental Health
Emily Fitzpatrick and Chloe Mann (University of Nebraska - Lincoln, USA); Nosakhare I Idiaghe (University of Nebraska-Lincoln, USA); Jessica R Deters (University of Nebraska - Lincoln, USA)

10:45
WIP: Examining the Impact of a Flexible Extension Policy on Student Learning Experience in a Large-Scale Computing Course
Charisse Liu, Yuerou Tang, Narges Norouzi and Lisa Yan (University of California, Berkeley, USA)

11:00
An exploration of Asian engineering students' mental health conditions, support, and stigma-related barriers to help-seeking
Qiuxing Chen and Matilde Sánchez-Peña (University at Buffalo, USA); Nichole Ramirez (University of Texas at El Paso, USA)

11:15
Navigating the Impostor Phenomenon in Computer Science Education: Insights From Two Major Southeastern Institutions in the United States
Pedro Guillermo Feijóo-García (Georgia Institute of Technology, USA); Alexandre Gomes de Siqueira and Tomas Delclaux Rodriguez-Rey (University of Florida, USA); Olufisayo Omojokun (Georgia Institute of Technology, USA)

Technical Program: Wednesday, October 16 (cont)

10:30 - 12:00
W206: Undergraduate Education for Construction Industry
Session Chair: Chan Lu (University of Georgia, USA)
Room: Fairchild

10:30
Rethinking Work in the Age of Robots: Insights from the Construction Industry
Edward C Obi-Rapu and Denise R Simmons (University of Florida, USA)

10:45
Mapping Essential Competencies for Human-Robot Collaboration in Construction: A Sociotechnical Systems Perspective
Ebenezer Olukanni (Virginia Tech, USA); Abiola Akanmu (Virginia Tech & Myers Lawson School of Construction, USA); Adedeji Afolabi (Virginia Tech, USA); Houtan Jebelli (University of Illinois Urbana-Champaign, USA)

11:00
Industry and Academia Perceptions of Competencies for Human-Robot Collaboration in the Construction Industry
Ebenezer Olukanni (Virginia Tech, USA); Abiola Akanmu (Virginia Tech & Myers Lawson School of Construction, USA); Houtan Jebelli (University of Illinois Urbana-Champaign, USA); Adedeji Afolabi (Virginia Tech, USA)

11:15
Mapping the Competencies for Implementing Sensing Technologies in the Construction Industry Through Technology-Organization-Environment Framework
Abiola Adegoke (Virginia Tech, USA); Abiola Akanmu (Virginia Tech & Myers Lawson School of Construction, USA); Adedeji Afolabi (Virginia Tech, USA); Yewande Abraham (Rochester Institute of Technology, USA); Chuma Nnaji (Texas A & M University, USA)

11:30
Comparative Analysis of Instructors' and Practitioners' Perspective on Competencies for Implementing Sensing Technologies in the Construction Industry
Abiola Adegoke (Virginia Tech, USA); Abiola Akanmu (Virginia Tech & Myers Lawson School of Construction, USA); Adedeji Afolabi (Virginia Tech, USA); Yewande Abraham (Rochester Institute of Technology, USA); Chuma Nnaji (Texas A & M University, USA)

11:45
Towards Personalized Learning Environments: Using Machine Learning to Predict Students' Learning Styles in a Mixed Reality Environment
Mariam A Tomori I and Omobolanle Ogunseiju (Georgia Institute of Technology, USA); Manideep Tummalapudi (California State University Fresno, USA); Srikanth Bangaru (Inncircles Technologies Inc, USA)

Technical Program: Wednesday, October 16 (cont)

10:30 - 12:00
W207: Capstone Education 2
Session Chair: Fuqun Huang (Western Washington University, USA)
Room: Columbia 2

10:30
Changes in Students' Understanding and Use of Representations During a Design Course
R. Alan Cheville (Bucknell University, USA); Sarah Appelhans (Lafayette College, United States of America, USA); Stewart Thomas, Michael S. Thompson and Rebecca L Thomas (Bucknell University, USA)

10:45
A Capstone Design Project Based on Optical Frequency Domain Reflectometry (OFDR): A Comprehensive Undergraduate Research Project
Jacob Watts, Jared Beh and Shellee Dyer (Weber State University, USA)

11:00
WIP: Complementary Teaching Modes to Promote Design Self-Efficacy
Heather M Phillips, Nicholas Nobile, Matthew Barry and Rajkumar Kubendran (University of Pittsburgh, USA); Mohamed Zaghloul (The University of Pittsburgh, USA); Ahmed H Dallal (University of Pittsburgh, USA)

11:15
WIP: Developing Novice Design Thinkers
Mohamed Zaghloul (The University of Pittsburgh, USA); Heather M Phillips, Amr Hassan and Samuel J Dickerson (University of Pittsburgh, USA)

11:30
WIP: Measuring the Impact of Design Problem Solving on Diversity, Equity, and Inclusion in ECE Classes
Mohamed Zaghloul (The University of Pittsburgh, USA); Amr Hassan (University of Pittsburgh, USA)

11:45
Leveraging Industry 4.0 in Education for Remote Implementation in a Team-Based Computer Engineering Capstone Project
Sangit Sasidhar and Jithin Vachery (National University of Singapore, Singapore)

Technical Program: Wednesday, October 16 (cont)

10:30 - 12:00
W208: Instructional Method 1
Session Chair: Mireilla Bikanga Ada (University of Glasgow, UK)
Room: Embassy

10:30
Engineering Studio Pedagogy - First Experience in Integrating Novel Studio Sessions in Biomedical Engineering Courses
Viswajith Siruvallur Vasudevan, Stephanie Fuchs and Jonathan Butcher (Cornell University, USA)

10:45
WIP: Mobile Experiments for an Enhanced Engineering Learning Experience
Carlos J Landaverde Alvarado (The University of Texas at Austin, USA)

11:00
Exploring the Significance of Theatre as a Pedagogical Tool in Teaching Personal Communication to Engineering Students
Brainerd Prince (Plaksha University, India); Hortense Gerardo (University of California, San Diego, USA); Vinayak K Joshi (Plaksha University, India)

11:15
WIP: Unflipping the Classroom: Analyzing the Consequences of Toning Down Blended Learning
Martín Liz-Domínguez (University of Santiago de Compostela, Spain); Manuel Caeiro-Rodríguez (University of Vigo, Spain); Martín Llamas-Nistal (Atlanttic - University of Vigo, Spain); Fernando Mikic-Fonte (Universidad de Vigo, Spain)

11:30
The Current Status of Guided Note-Taking: What We Know and What We Have Yet to Learn
Victor H Guarochico-Moreira (Escuela Superior Politécnica del Litoral, ESPOL, Ecuador); Alex Romero-Vera and Víctor Velasco-Galarza (Escuela Superior Politécnica del Litoral, Ecuador); Mayken Espinoza Andaluz (Escuela Superior Politécnica del Litoral (ESPOL), Ecuador); Sharon Guaman-Quintanilla and Margarita Ortiz-Rojas (Escuela Superior Politécnica del Litoral, ESPOL, Ecuador)

11:45
WIP: Adventures in Electromagnetics: A Two-Year Exploration of Engaging, Hands-On Labs to Spark Curiosity and Deepen Understanding
Arthur Depoian II, Son Vu and Colleen Bailey (University of North Texas, USA)

Technical Program: Wednesday, October 16 (cont)

10:30 - 12:00
W209: Undergraduate Programming Education 1
Session Chair: Nadia Najjar (UNC Charlotte, USA)
Room: Columbia 3-4

10:30
Understanding the Transfer of Knowledge in Introductory Programming Classes
Michael Knox (UM Flint, USA); Charlotte Tang (University of Michigan - Flint, USA); Halil Bisgin (The University of Michigan - Flint, USA); Murali Mani (University of Michigan-Flint, USA); Suleyman Uludag (The University of Michigan - Flint, USA)

10:45
A Systematic Literature Review on the Use of Software Testing and Programming With Novice Students
Anália Cristina Bezerra Tiburtino Meira, Dalton D. Serey Guerrero and Wilkerson L. Andrade (Federal University of Campina Grande, Brazil)

11:00
MeriCOIN: Enhancing Motivation and Continuous Learning in Computer Engineering Students Through 3D Printed Rewards
Joaquin Gayoso-Cabada (UPM, Spain); Daniel Lopez (Universidad Politécnica de Madrid, Spain); Edmundo Tovar (Universidad Politécnica de Madrid & Facultad de Informática, Spain); Aldo Gordillo and Gustavo Adolfo Hernandez Peñaloza (Universidad Politécnica de Madrid, Spain)

11:15
Evolution of Motivational Factors During an Introductory Programming Course
Tania Garbin and Carlos Alberto Dainese (Universidade Federal de Ouro Preto - UFOP, Brazil); Calana Mei-Pou Chan (Macao Polytechnic University, Macao); Philip I.S. Lei (Macao Polytechnic University & University of Coimbra, Macao); Chan Tong Lam (Macao Polytechnic Institute, China); Anabela Gomes (Polytechnic Institute of Coimbra, ISEC & CISUC, University of Coimbra, Portugal); António José Mendes (University of Coimbra & Dep. of Informatics Engineering, CISUC, Portugal)

11:30
Impact of the Use of Collaborative Learning Networks in Programming Education Within a Challenge-Based Learning Approach
Rodrigo Adamski (Federal University of Pernambuco, Brazil); Cristiano Araujo (UFPE, Brazil)

12:00 - 13:30
W300: Lunch
Room: Columbia 5-12

12:00 - 13:30
Keynote
AI for Education: The Journey is Just Getting Started
Speaker: Chris Daugherty, Educational Strategy Lead (Google, USA)
Room: Columbia 5-12

Technical Program: Wednesday, October 16 (cont)

13:30 - 15:00
FIE 2025 Planning Committee
Room: Van Ness

13:30 - 15:00
W501: Undergraduate Co-Curricular Activities
Session Chair: Amir Saeidi (UC Davis, USA)
Room: Columbia 1

13:30
Enhancing Intercultural Competence Through Structured Study Abroad Program
Sakhi Aggrawal (Purdue University, USA); Aparajita Jaiswal (Purdue University, West Lafayette, USA); Atin Dewan (Purdue University, USA)

13:45
WIP: Understanding the Experiences of Women Engineering Students that Depart from Engineering Design Clubs
Katherine Drinkwater and Susan Sajadi (Virginia Tech, USA)

14:00
Developing Global Competences and Values for Sustainable Development for Interdisciplinary Students Through a COIL Experience Between Chile and Colombia
Sandra Milena Merchán-Rubiano (Universidad El Bosque); Pilar Gárate (Universidad Técnica Federico Santa María, Chile)

14:15
Empowering Educators: HubICL's Contribution to Intercultural Competence Development
Aparajita Jaiswal (Purdue University, West Lafayette, USA); Kelsey Patton and Annette Benson (Purdue University, USA)

14:30
Navigating Unfamiliar Waters: Enhancing Intercultural Understanding and Academic Self-Efficacy Among American Computer Science Students in Japan
Chibuzor Joseph Okocha, Jeremiah J Blanchard and Gloria J Kim (University of Florida, USA); Mariko Adachi (Kyoto University, Japan)

14:45
Implementing Problem-Based and Experiential Learning for Undergraduate Students in Power Electronics Applied to Renewable Energy
Alanis M Colon Gonzalez (University of Puerto Rico - Mayagüez, Puerto Rico); Valentina Ramirez, Marielys E Quinones Perez, Isabel P Rivera Mojica, Jose Crespo Vargas and Akim A Perez Cotto (University of Puerto Rico - Mayaguez, Puerto Rico); Eduardo Ortiz-Rivera (University of Puerto Rico-Mayaguez, Puerto Rico)

Technical Program: Wednesday, October 16 (cont)

13:30 - 15:00
W502: Undergraduate Education 6
Session Chair: Chan Lu (University of Georgia, USA)
Room: Tenley Town

13:30
Promoting Educational Innovations in the Accreditation of 3 Industrial Engineering Programs in Bogota
Juan Sebastián Sánchez-Gómez (Universidad de los Andes, Colombia)

13:45
WIP: A Systematic Scoping Review of the Appli`cation of Asset-Based Theoretical Frameworks in Engineering and Science Education
Stephanie A. Claussen (San Francisco State University, USA)

14:00
Exploring the Impact of Introducing Asset-based Thinking on Faculty Perspectives
Tejashwini Rajashankar and Marlen Trigueros (California State University, Los Angeles, USA); Kenya Z. Mejia (California State University Los Angeles, USA); Lizabeth Thompson (Cal Poly, San Luis Obispo, USA); Corin L Bowen and Gustavo B Menezes (California State University, Los Angeles, USA)

14:15
WIP: Examining Psychological Distance Perceptions Towards Advanced Technologies among University Students
Xingchen Xu and Anjing Dai (Arizona State University, USA); Siqing Wei (University of Cincinnati, USA); Li Tan (Arizona State University, USA)

14:30
WIP: The Effect of Scholarships and Community on Graduation Rates for STEM Majors
Akhila Solipuram (University of Maryland Baltimore County, USA); Anupam Joshi (University of Maryland, Baltimore County, USA); Jay A Perman (University System of Maryland, USA)

14:45
Future You: A Conversation with an AI-Generated Future Self Reduces Anxiety, Negative Emotions, and Increases Future Self-Continuity
Pat Pataranutaporn (Massachusetts Institute of Technology, USA); Kavin Winson (KBTG, Thailand); Peggy Yin (Harvard University, USA); Auttasak Lapapirojn, Pichayoot Ouppaphan and Monchai Lertsutthiwong (KBTG, Thailand); Pattie Maes (MIT Media Laboratory, USA); Hal Hershfield (UCLA, USA)

Technical Program: Wednesday, October 16 (cont)

13:30 - 15:00
W503: Curriculum & Course Development for Undergraduate Students 3
Session Chair: Zubaer Hossain (University of North Texas, USA)
Room: Rock Creek

13:30
Using Nano Drone and RaspberyPi to Teach Robotics and Programming in Online Undergraduate Curriculum: A Case Study
Chris Janke (Embry-Riddle Aeronautical University, USA); Yuetong Lin (Embry-Riddle Aeronautical University Worldwide, USA)

13:45
Leonardo 21 Project: A New Approach
Claudio R Brito (Science and Education Research Organization, Portugal); Melany M Ciampi (World Organization on System Engineering and Information Technology (WCSEIT) & President, Portugal)

14:00
What are AI Bachelor Degrees About? A Comparative Analysis
Zhenni He, Patrick Cheong-Iao Pang and Chi Kin Lam (Macao Polytechnic University, Macao)

14:15
Work-In-Progress: Systems Thinking Applied to Higher Education Curricula - A Case Study
Reza Rahdar (Embry-Riddle Aeronautical University, Worldwide, USA); Yuetong Lin (Embry-Riddle Aeronautical University Worldwide, USA); Mark London and Hong Jiang (Embry-Riddle Aeronautical University, USA)

14:30
Exploring the Synergy Between NoSQL Teaching and Research
Suneuy Kim (San Jose State University, USA)

14:45
Mapping the Pathways: A Comparative Analysis of AI/ML/DS Prerequisite Structures in R1 Institutions in the United States
Rose Niousha, Dev Ahluwalia and Michael Wu (University of California, Berkeley, USA); Lisa Zhang (University of Toronto Mississauga, USA); Narges Norouzi (University of California, Berkeley, USA)

Technical Program: Wednesday, October 16 (cont)

13:30 - 15:00
W504: Diversity and Broadening Participation in K-12
Session Chair: Srikanth Vemula (College of Saint Benedict and Saint John's University, USA)
Room: Shaw

13:30
Innovative Approaches in Education: A Systematic Literature Review on Computer-Supported Collaborative Activities and Digital Inclusion for Youth and Adult Education
Flávio Lopes Da Silva (Universidade de São Paulo, Brazil); Anarosa A. F. Brandão (Universidade de São Paulo & Escola Politécnica, Brazil)

13:45
ESSPI as a Tool for STEM Education in Energy Backup System Design
Eduardo Ortiz-Rivera and Guillermo Lopez-Cardalda (University of Puerto Rico-Mayaguez, Puerto Rico); Natanael Batista Alvarez (University of Puerto Rico, Mayaguez Campus, Puerto Rico); Jesús F. Montalvo Nazario, Brian E Vazquez Acosta and Alanis Colón González (University of Puerto Rico-Mayaguez, Puerto Rico)

14:00
Papertronic Puppets: Teaching STEM and Storytelling Through Creative Construction
Sarah Kushner, John Kanji and Paul H. Dietz (University of Toronto, Canada); Daniel J. Wigdor (DGP Lab, University of Toronto, Canada)

14:15
WIP: DEPICT for Out-Of-School Time (DEPICT4OST): Guiding Undergraduates in the Development and Implementation of Computational-Infused Writing Activities
Ruth C Torres Castillo (New Mexico State University, USA); Sarah Hug (Colorado Evaluation and Research Consulting, USA); Adan Delval (New Mexico State University, USA); Wendy Chi (ABC Evaluation, USA); Enrico Pontelli (New Mexico State University, USA)

14:30
WIP: Rural Water Education (RWE) Partnership for Place-Based STEM Learning in Out-Of-School Programs
Joni M. Lakin (University of Alabama, USA); Shannon Davidson and Emily Elliott (The University of Alabama, USA); Lisa Davis and Joni Corbin (University of Alabama, USA); Corinne Baroni (The University of Alabama, USA); Abigail Davies (University of Alabama, USA); Dominic Combs, Hope Whiteside and Mark Elliott (The University of Alabama, USA)

14:45
STEM Play & Learn: A Summer Family Learning Programme in Socio-Economically Disadvantaged Communities
Alexandra Alcala, Josephine Bleach, Jennifer ONeill, Julie Booth, Trinity Kane, Emma Hennessy-Mccann and Kate Darmody (National College of Ireland, Ireland); Pramod Pathak (Technological University of Dublin, Ireland); Paul Stynes (National College of Ireland, Ireland)

Technical Program: Wednesday, October 16 (cont)

13:30 - 15:00
W505: Entrepreneurial Education
Session Chair: Pedro Fonseca (University of Aveiro, Portugal)
Room: Gunston

13:30
Exploring the Impacts of Entrepreneurial Experiences in Biomedical Engineering Research Experiences for Undergraduate Programs
Alexandra M Jackson, Noor Aulakh, Cassandra Jamison and Kaitlin Mallouk (Rowan University, USA)

13:45
WIP: Exploring STEM Students' Enrollment in Entrepreneurship Education Programs: A Binary Logistic Regression Approach
Carlos Felipe Rodriguez-Hernandez and Prateek Shekhar (New Jersey Institute of Technology, USA)

14:00
A Cross-Discipline Technopreneurship Course: Student Perceived Benefits and Considerations
Jonathan W. Browning, Karen Rafferty and Neil Anderson (Queen's University Belfast, United Kingdom (Great Britain)); Leo Galway (Queens University Belfast, United Kingdom (Great Britain))

14:15
WIP: Does Instructor's Facilitation Matter for the Entrepreneurial Mindset in Story-driven Learning Classrooms?
Hye Yeon Lee and Joseph M. Le Doux (Georgia Institute of Technology, USA)

14:30
The Impact of Problem-Solving Studios on Entrepreneurial Mindset of Engineering Students
Dimantha S. Kottawa Gamage and Durward K. Sobek (Montana State University, USA)

14:45
Work-In-Progress: Validation of Connections and Creating Value Assessments
Marcus Vinicius Melo de Lyra, Sherri Youssef and Krista M. Kecskemety (The Ohio State University, USA)

Technical Program: Wednesday, October 16 (cont)

13:30 - 15:00
W506: Virtual Learning in Undergraduate Education
Session Chair: Susmita Haldar (Fanshawe College and Western University, Canada)
Room: Fairchild

13:30
A Mixed Methods Analysis of Cognitive Engagement based on Video Position-Based Notes in Programming Learning
Xiaonan Wang (Kobe University, Japan); Yi Sun (Kobe Institute of Computing, Japan); Yancong Su (Xiamen University of Technology, China); Takeshi Nishida, Kazuhiro Ohtsuki and Hidenari Kiyomitsu (Kobe University, Japan)

13:45
Exploring Engineering Student's Self-Regulatory Strategies in Collaborative Virtual Reality Learning Environments: Preliminary Findings From a Land-Surveying Task
Isaac D Dunmoye, Julie P. Martin, Jennifer S. Brown, Vincent Fakiyesi and Deborah Moyaki (University of Georgia, USA); Dominik May (University Wuppertal, Germany)

14:00
Engineering Education Research on Collaborative Learning in Virtual Reality (VR) Platforms: A Systematic Review Protocol
Isaac D Dunmoye, Landon Smith, Julie P. Martin, Jennifer S. Brown, Similoluwa T Ige and Nathaniel Hunsu (University of Georgia, USA)

14:15
Student-Centered Learning Through Augmented Reality in Anatomy and Physiology Education
Cody Michael Johnson, Rui Wu, Shawn Moore, Elizabeth Jones, Saurabh Savara and Edward Gonzales (East Carolina University, USA)

14:30
(Almost) Anywhere Virtual Computing Learning Environment: Student Technology Acceptance
Patrick Seeling (Central Michigan University, USA); Michael P McGarry (University of Texas at El Paso, USA)

14:45
Turtle VR: Virtual Reality Field Experience for Geological Engineering Education Enhancement
Skylar Harrison, Stephanie E Sarambo, Nicholas Weaver and Stephen Moysey (East Carolina University, USA); Kelly Best Lazar (Clemson University, USA); Rui Wu (East Carolina University, USA)

Technical Program: Wednesday, October 16 (cont)

13:30 - 15:00
W507: Computer-Based Instruction
Session Chair: Bowen Hui (University of British Columbia, Canada)
Room: Columbia 2

13:30
Examining Student Learning Engagement in Canvas to Support Personalized Learning
Zhaowei Zhang, Bo Pei and James Hatten (University of South Florida, USA); Zhiting Zhou (Vanderbilt University, USA)

13:45
Enhancing Design Education Through Spatial Computing: A Comparative Study of Traditional and Immersive Technologies in Chair Design Projects
Lei Xia and Xiaomei Li (Tongji University, China); Yulong Qin (Shanghai Jiaotong University, China); Dan Li (Tongji University & Tezign, USA); Ling Fan (Tongji University, China)

14:00
Discovering the Influence of the Metaverse in Experiential Learning - a Literature Review
Abdón Carrera Rivera (Universidad de Guayaquil, Ecuador); Gabriel Carrera Rivera (Universidad Internacional del Ecuador, Ecuador); Mayken Espinoza Andaluz (Escuela Superior Politécnica del Litoral (ESPOL), Ecuador)

14:15
Second-Order Incentives: An Innovative Automated Approach to Enhance Class Participation for College Students
Leyla Nazhandali (Virginia Tech, USA)

14:30
Leveraging Fixation Transition Patterns and Targeted Regions of Interest for Analyzing Code Comprehension
Md Shakil Hossain, Andrew Allen, Noushin Gauhar and Rushmila Shabneen (Georgia Southern University, USA)

Technical Program: Wednesday, October 16 (cont)

13:30 - 15:00
W508: Instructional Method 2
Session Chair: Mireilla Bikanga Ada (University of Glasgow, UK)
Room: Embassy

13:30
Enhancing Pre-Class Content Learning in a Flipped Classroom: An Experimental Study of the Benefits of Note-Taking
Alex Romero-Vera (Escuela Superior Politécnica del Litoral, Ecuador); Victor H Guarochico-Moreira (Escuela Superior Politécnica del Litoral, ESPOL, Ecuador); Víctor Velasco-Galarza (Escuela Superior Politécnica del Litoral, Ecuador); Mayken Espinoza Andaluz (Escuela Superior Politécnica del Litoral (ESPOL), Ecuador); Sharon Guaman-Quintanilla (Escuela Superior Politécnica del Litoral, ESPOL, Ecuador); Katherine Chiluiza (ESPOL, Ecuador)

13:45
WIP: Use of a Self-Executing Notebook Based on Matlab's Live Editor for the Development of Autonomous Learning Competency in an Analog Communications Course
Angelo Velarde and Juan-de-Dios Segura (Pontificia Universidad Católica del Perú, Peru)

14:00
Work-In-Progress: Teaching Quality Using Realistic Design and Implementation Projects
Hugh L Mcmanus (Northeastern University & Loyola Marymount University, USA); Rehab Ali (Northeastern University, USA)

14:15
EduKona: A Customizable, Mobile-Friendly Platform for Enhanced Educational Engagement and Collaboration
Ayman Hajja (University of North Carolina at Charlotte); Aryan Aladar, Jack King and Dylan Ilg (University of North Carolina at Charlotte, USA)

Technical Program: Wednesday, October 16 (cont)

13:30 - 15:00
W509: Undergraduate Programming Education 2
Session Chair: Carolyn Pe Rosiene (University of Hartford, USA)
Room: Columbia 3-4

13:30
Exploring the Effectiveness of AI-Enabled Microlearning in Introductory Database Design and Programming Course
Rajagopal Sankaranarayanan (The University of Texas at Austin, USA); Shamima Mithun (IUPUI, USA)

13:45
Exploring the Role of ChatGPT in Undergraduate Programming Education: A Fine-Grained Analysis of Students' Behaviors and Inquiry Patterns
Fan Xu (The Ohio State University, USA); Dan Sun (Zhejiang University, China); Yi Cao (Virginia Tech, USA)

14:00
Work in Progress: Integration of A.I. Tools on an Open-Ended Computer Programming Project
Emily Hammond and Courtney J Faber (University at Buffalo, USA)

14:15
How Novice Programmers Use and Experience ChatGPT when Solving Programming Exercises in an Introductory Course
Andreas Scholl and Natalie Kiesler (Nuremberg Tech, Germany)

14:30
WIP: Code Insight: Combining Code Reading and Debugging Practices for Active Learning in Entry-Level Computer Science Courses
Keerti Banweer (The University of Oklahoma, USA); Deborah Trytten (University of Oklahoma, USA)

13:30 - 15:00
FIE 2025 Planning Committee
Room: Van Ness

15:00 - 15:30
W600: Coffee Break
Room: Columbia NorthWest

Technical Program: Wednesday, October 16 (cont)

15:30 - 17:00
W601: AI Literacy for Undergraduate Students
Session Chair: Zubaer Hossain (University of North Texas, USA)
Room: Columbia 1

15:30
Expanding AI Awareness Through Everyday Interactions with AI: A Reflective Journal Study
Ashish Hingle and Aditya Johri (George Mason University, USA)

15:45
Fostering AI Literacy Through Simple Prompting Exercises Using Dall-E
Tatiana Ringenberg, Nidhi Bhardwaj, Nathan Kim and Paul J Thomas (Purdue University, USA)

16:00
Two Sides of the Same Coin: Differing Approaches to Generative AI in Two Computer Science Classrooms
Sean Mackay (University at Buffalo, USA); Kurt Eiselt (University of California, Davis, USA); Adrienne Decker (University at Buffalo, USA)

16:15
AI Literacy for All: Adjustable Interdisciplinary Socio-Technical Curriculum
Sri Yash Tadimalla and Mary Lou Maher (University of North Carolina at Charlotte, USA)

16:30
Focusing on Programmer Literacy in the Time of AI-Aided Code Generation
Joel A Rosiene (Eastern Connecticut State University, USA); Carolyn Rosiene (University of Hartford, USA)

Technical Program: Wednesday, October 16 (cont)

15:30 - 17:00
W602: Undergraduate Education 7
Session Chair: Mireilla Bikanga Ada (University of Glasgow, UK)
Room: Tenley Town

15:30
Soft Skills in Remote Software Development: A Comparative Study Between the Demands of the Biggest and the Best to Work IT Companies
Simone C. dos Santos, Warley Soares De Souza and Pedro A. A. Falcão (Federal University of Pernambuco, Brazil)

15:45
Relatable Rebound Story Project: Transforming How Students View and Overcome Setbacks
Linda M. Wills, Thomas Collins and Jennifer Wolfe (Georgia Institute of Technology, USA); James De Ocampo (Georgia Tech, USA); Ted S Lee (Georgia Institute of Technology, USA); Aric Ting (Georgia Institute of Technology, Afghanistan)

16:00
Evolution of a Networking Course - Attitude Changes a Decade and a Pandemic Later
Patrick Seeling (Central Michigan University, USA); Michael P McGarry (University of Texas at El Paso, USA)

16:15
A PPG Demo GUI for Teaching Signal Processing Concepts
Mahesh Banavar, Olaoluwayimika Olugbenle, Logan Drake, Yemi Afolayanka, Arfina Rahman, Jianhua Zhang and Masudul Imtiaz (Clarkson University, USA)

16:30
Proposal of a Method for Generating Program Tracing Tasks
Yuichiro Tateiwa (Nagoya Institute of Technology, Japan); Tomohiro Mogi and Takahito Tomoto (Chiba Institute of Technology, Japan); Takako Akakura (Tokyo University of Science, Japan)

16:45
Converging Paths in Divergent Systems: A Comparative Analysis of Data Science Education Strategies in China and the United States
Duo Li (Shenyang Institute of Technology, USA); Elizabeth Milonas (CUNY New York City College of Technology, USA); Qiping Zhang (Long Island University, USA)

Technical Program: Wednesday, October 16 (cont)

15:30 - 17:00
W603: Math Education for Undergraduates
Session Chair: Anjum Chida (Rice University, USA)
Room: Rock Creek

15:30
Analyzing the Impact of Remote Teaching on Calculus I Students' Performance: A Longitudinal Study of Subsequent Calculus Course Success
Katiuscia Teixeira and Xin Li (University of Central Florida, USA)

15:45
Design and Implementation of Calc-ONE: A Gamified Approach to Reinforce Calculus Concepts
Alberth Alvarado, Roberto Portillo and Joaquin Marroquin (Universidad Galileo, Guatemala)

16:00
Exploratory Learning for Python Error Messages: Outcomes Beyond Learning
Marci DeCaro, Angela Thompson, Lianda Velic and Cenetria Crockett (University of Louisville, USA); Campbell R. Bego (University of Louisville & J. B. Speed School of Engineering, USA)

16:15
Exploring Mathematical Proficiency in AI-Driven Engineering Environments: A Survey-Based Study of Current Workforce
Jafar F. Al Sharab (Northwestern State University of Louisiana, USA & STEM Pioneers, USA); Adeal S Matuk (University of Anbar, Iraq); Moftah Ali (Northwestern State University of Louisiana, USA); Xinjia Chen (Northwestern State University, USA)

16:30
AR-Classroom Usability: Implications for UX Research on AR-Enabled Educational Technologies for 3D Matrix Algebra Learning
Samantha D. Aguilar, Chengyuan Qian, Uttamasha Monjoree, Heather Burte, Jeffrey Liew, Francis Quek, Philip Yasskin, Dezhen Song and Wei Yan (Texas A&M University, USA)

16:45
WIP: Standards-Based Grading in Calculus With Precalculus
Jacquelyn L Rische (Marymount University, USA)

Technical Program: Wednesday, October 16 (cont)

15:30 - 17:00
W604: Undergraduate Competencies Development 2
Session Chair: Olanrewaju Paul Olaogun (Merrimack College, USA)
Room: Shaw

15:30
Centering Engineering Students' Voices Through Course Syllabus Negotiations & Co-Creation
Cassie Wallwey (Virginia Tech, USA)

15:45
Perspectives From Academics and Practitioners on the Integration of DEI in Engineering Codes of Ethics
Justin L Hess and Sowmya Panuganti (Purdue University, USA); Isil Anakok (Virginia Tech, USA); Brent Jesiek (Purdue University, USA); Andrew Katz (Virginia Tech, USA)

16:00
WIP: Developing Career Adaptability Skills Through Teaching: Undergraduate Student Development for Transforming Careers
Anthony Diaz, Dahana Moz Ruiz and Patricia Morreale (Kean University, USA); Sarah Hug (Colorado Evaluation and Research Consulting, USA)

16:15
Cultivating Character via Mastery Based Learning: A Case Study in a Thermal Fluids Engineering Course
Olga Pierrakos, Jessica Koehler and Saami Yazdani (Wake Forest University, USA)

16:30
Engineering students' perception of the competencies development after a challenge-based learning educational experience
María del Pilar García-Chitiva, Yara C. Almanza-Arjona and Olga Patricia Vazquez-Villegas (Tecnologico de Monterrey, Mexico)

16:45
Survey of Computing Professionals' Perceptions of Dispositions on the Job and Satisfaction With Their Coverage in Undergraduate Programs
Marisa Exter and Nursah Yakut (Purdue University, USA); Mihaela Sabin (University of New Hampshire, USA); Deepti Tagare (University of Texas at San Antonio, USA); Iryna Ashby (Purdue University, USA)

Technical Program: Wednesday, October 16 (cont)

15:30 - 17:00
W606: Bridging Two to Four Year Higher Education
Session Chair: Chan Lu (University of Georgia, USA)
Room: Fairchild

15:30
Technical Colleges as Pipelines to a University Degree
Michael Bailey (Utah State University, USA)

15:45
Status of the Mathematics, Engineering, Science Achievement (MESA) Engineering Program
David Parent (San Jose State University, USA); Mathew Stowe and Nicole Okomoto (SJSU, USA)

16:00
Identifying Interpretable Features Impacting Nontraditional Undergraduate Computer Science Student Retention
Jiang Li, Chunbo Chu and Todd Whittaker (Franklin University, USA)

16:15
Facilitating Engineering Principles via Industry Standards: The Case of Lean Sigma in a Community College Classroom
LaTasha T Starr (Texas A&M University, USA); Noemi Mendoza (Texas A&M, USA); Shana Shaw (Texas A&M University, USA)

16:30
WIP: A Unit Testing Framework for Self-Guided Personalized Online Robotics Learning
Ponkoj C Shill and David Feil-Seifer (University of Nevada, Reno, USA); Jiullian-Lee M Vargas Ruiz (University of Puerto Rico, Arecibo, USA); Rui Wu (East Carolina University, USA)

Technical Program: Wednesday, October 16 (cont)

15:30 - 17:00
W607: Learning Tools in Engineering Education
Session Chair: Susmita Haldar (Fanshawe College and Western University, Canada)
Room: Columbia 2

15:30
Using ChatGPT in Undergraduate Computer Science and Software Engineering Courses: A Student's Perspective
Noah C Andersen-Kiel and Panagiotis (Panos) Linos (Butler University, USA)

15:45
WIP: Active Learning through Prompt Engineering and Agentic AI Simulation-A Pilot Project in Computer Networks Education
Xiaoguang Ma (University of Wisconsin-Platteville, USA); Jing Wang (Dell, USA)

16:00
A Multi-label Classification Approach for Categorizing Beginner Programming Problems from Online Judges
Ana Sofia Schweizer Silvestre, Bruno Vargas de Souza, Victor Hugo França Lisboa and Vinícius R. P. Borges (Universidade de Brasília, Brazil)

16:15
Integrating Conversational Large Language Models Into Student Learning: A Case Study of ChatGPT in Software Engineering Education
Yi Liu (University of North Carolina Wilmington, USA)

16:30
WIP: Better Understanding Software Engineering Practices and Tools in Engineering Education
Stephanos Matsumoto (Olin College of Engineering, USA); Michelle Edith Jarvie-Eggart, PE (Michigan Technological University, USA)

16:45
BoilerTAI: A Platform for Enhancing Instruction Using Generative AI in Educational Forums
Anvit Sinha, Shruti Goyal, Zachary Will Sy, Rhianna Kuperus, Ethan Dickey and Andres Bejarano (Purdue University, USA)

Technical Program: Wednesday, October 16 (cont)

15:30 - 17:00
W608: Undergraduate Student Motivation
Session Chair: Mireilla Bikanga Ada (University of Glasgow, UK)
Room: Embassy

15:30
When Choice Doesn't Mean Motivation
Jeffrey J. Richardson and Senay Purzer (Purdue University, USA)

15:45
Impact of Feedback Features on Students' Learning Strategies: A Systematic Literature Review
Calana Mei-Pou Chan (Macao Polytechnic University, Macao); António José Mendes (University of Coimbra & Dep. of Informatics Engineering, CISUC, Portugal); Patrick Cheong-Iao Pang (Macao Polytechnic University, Macao)

16:00
WIP: Contemplative Practices' Effects on Compassion, Belonging, and Self-Empowerment in Undergraduate Engineering Experiences
Jen L Sundstrom, Eleanor Ramos and Yevgeniya V Zastavker (Olin College of Engineering, USA); Madhvi J Venkatesh (Vanderbilt University, USA)

16:15
Student Valuations for Opportunity-Based Education
Rebecca L Thomas (Bucknell University, USA); Sarah Appelhans (Lafayette College, United States of America, USA); Michael S. Thompson, Stewart Thomas and R. Alan Cheville (Bucknell University, USA)

16:30
Designing Courses for Autonomy Support: A Practical Framework Inspired by Self-Determination Theory for Motivation
Jonathan Stolk (Olin College, USA)

Technical Program: Wednesday, October 16 (cont)

15:30 - 17:00
W609: Undergraduate Programming Education 3
Session Chair: Sathish Akula (Florida Polytechnic University, USA)
Room: Columbia 3-4

15:30
A Parsing Technique for Enhancing Compiler Syntax Error Messages for Student Programmers
Sana M Algaraibeh and Clinton L. Jeffery (New Mexico Institute of Mining and Technology, USA); Terence Soule (University of Idaho, USA); Tonia A Dousay (University of Alaska Anchorage, USA)

15:45
Utilizing Real-World Software Vulnerabilities to Enhance Secure Programming Education
Kostadin Damevski (Virginia Commonwealth University, USA); Denise Daniels (Virginia State University, USA); Hui Chen (CUNY Brooklyn College, USA); Joon Suk Lee (Virginia State University, USA)

16:00
Fully and Automatically Testable Tasks for Programming Novices Derived From a Modified Test-First Approach
Matthias Laengrich and Joerg Schulze (University of Applied Sciences Zittau / Goerlitz, Germany); Heinz Dobler and Jean D. Hallewell Haslwanter (University of Applied Sciences Upper Austria, Austria)

16:15
A Proposal of Adaptive Learning System for Object-Oriented Programming Education
Angela Vitória Mota Vieira, José Francisco Magalhães, Netto and Ramayana Assunção Menezes, Jr. (Federal University of Amazonas, Brazil)

16:30
Enriching Python Programming Education With Generative AI: Leveraging Large Language Models for Personalized Support and Interactive Learning
Srikanth Vemula (Human-Centric Explainable Intelligence Lab (hcXiL) & CSBSJU, USA)

16:45
WIP: Characterizing Student Programming Activity
Ruben Acuña and Ajay Bansal (Arizona State University, USA)