

FRONTIERS IN EDUCATION 2021

Envisioning Convergence in Engineering Education

October 13-16, 2021 • Lincoln, Nebraska USA



HOSTED BY THE UNIVERSITY OF NEBRASKA-LINCOLN COLLEGE OF ENGINEERING

FIE 2021 - Proceedings

You'll find all paper titles below, sorted as presented in the program. Please use the ID to the left of the titles as a reference for finding the paper.

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34413	Learning Circles for Engineering Educators to Nourish and Heal Lynne Slivovsky

Session T1B: Active Learning
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34476	The Effect of Assignment Scaffolding on Engineering Judgment Jessica Swenson
34712	Experiential Learning for Teaching Heating Ventilation and Air-conditioning Engineering James Butler
33982	Integrating Microsoft Teams to Promote Active Learning in Online Lecture and Lab Courses Asad Azemi
34500	A Template-Based Spaced Repetition Learning Solution Designed for Educators Ayman Hajja

Session T1C: AI & Machine Learning
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34061	Use of Machine Learning to Identify Predictors of Student Performance in Writing Viable Computer Programs with Repetition Loops and Methods Candido Cabo
34086	Can Students Produce Effective Training Data to Improve Formative Feedback? Edward Gehringer
34829	Echelon: An AI Tool for Clustering Student-Written SQL Queries Abdussalam Alawini
34156	Your Phone as a Sensor: Making IoT Accessible for Novice Programmers Devin Jean
34303	Integrating machine learning concepts into undergraduate classes Mahesh Banavar

Session T1D: Collaborative & Active Learning
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34405	IGARA: A Proposal for a Pedagogical Approach to Apply Educational Robotics through Collaborative Learning Joethe Carvalho
34497	Collaborative Innovation: A framework for promoting innovation-driven entrepreneurship across campus David Olawale
34501	Aspect-Based Emotion Analysis on Speech for Predicting Performance in Collaborative Learning Nasrin Dehbozorgi
34091	A need to introduce systematic team-based experiences in secondary schools Preethi Baligar
34289	The Relative Importance of Team Dynamics in Predicting Effective Teamwork Behaviors Siqing Wei

Session T1E: Student Perspectives
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34464	Assessing Student Perceptions of Emerging Concepts in Power & Energy Systems via Concept Maps: Rubric Development Valentina Cecchi
34595	Disparity Between Textbook Examples and What Young Students Find Interesting Bowen Hui
34690	A Journey that Motivates: Exploring the Associate Students Transition Framework Debbie Meharg
34722	Determining the Students' Preferable Learning Mode for Traditional Classroom Teaching and Forced Virtual Teaching Wen Cheng

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34224	Remote teaching and learning of software testing using active methodologies in the COVID-19 pandemic context Isaac Souza Elgrably
33657	Personalizing Online Computer Engineering Resources and Labs for Digital, Embedded, and Computer System Courses Peter Jamieson
33663	Face-to-face vs. Online learning in Engineering Courses

	Julietta Noguez
34174	Converting a biomedical instrumentation lab from in-person to online Rebecca Reck
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34122	Exploring the Association Between Self-Regulation of Learning and Programming Learning: A Systematic Literature Review and Multinational Investigation Leonardo Silva
34664	Scaffolding Student Success in the Wilds of Open Source Contribution Emily Lovell
34696	Encourage students to apply their knowledge and think “out of the box” while collaborating with local industry - Case Study Industrial Seminar Carolina Islas Sedano
34762	SimInt: A Structured Experience to Develop Mature Engineering Mindset Ruben Acuña
34786	Uncovering Generative Design Rationale in the Undergraduate Classroom Molly Goldstein
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34508	Exploratory Study on Accuracy of Students’ Mental Models of a Singly Linked List Eman Almadhoun
34730	PyDash - A Framework Based Educational Tool for Adaptive Streaming Video Algorithms Study Marcelo A. Marotta
34534	Developing an Interdisciplinary Pathway for Engineering Education Master’s Curriculum Ivan Enrique Esparragoza
34388	Towards the Fourth Industrial Revolution in Namibia: An Undergraduate AI Course Africanized Anastasia Shipepe
34107	Big Data Analytics APIs Architecture for Formative Assessors Wassim Mahfouz
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34377	Improving the Success of Non-Traditional Students in an Introductory Computing Course Christine Reilly
34723	Motivational factors influencing engineering faculty pursuit of instructional faculty positions at Hispanic-Serving Institutions Yamile Urquidi
34725	Use of Virtual Reality to Improve Engagement and Diversity Awareness in Architectural Engineering Students Heidi Diefes-Dux
33869	Women thriving in engineering: An innovative approach to listening to and learning from women who flourish in undergraduate engineering project teams. Richard Evans
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34703	Navigating and reconciling identity interference and values conflicts associated with our engineering identities: A conceptual framework Meagan Kendall
33751	Encouraging Asian academic STEM teachers to research their own teaching practice Anders Berglund
33661	A Critical Reflection on the Challenges of Implementing Culturally Sustaining Pedagogy Susan M. Lord

34558	Engineering Education Meets Organizational Science: Toward Best Practices for Strategic Change Jesse Pappas
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34419	WIP: Intersections Between Diversity, Equity, and Inclusion (DEI) and Ethics in Engineering Justin L. Hess
34365	An Inventory of Goals from CS1 Programs Processing a Data Series Violetta Lonati
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34251	Context, Competency and Authenticity in STEM Education Roger McDermott
33626	Mining Informal & Short Student Self-Reflections for Detecting Challenging Topics – A Learning Outcomes Insight Dashboard Swapna Gottipati
33656	Research Experiences for Teachers in Machine Learning Andreas Spanias
33700	A Review of Digital Ethnographic Methods with Implications for Engineering Education Research Aditya Johri
34456	Inspiring Computational Thinking: a Science Fair Case Study Arnold Pears
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33926	Online Teaching and Learning Experience at South African Higher Educational Institution during COVID-19 Senthil Krishnamurthy
34193	A Trans-regional Online and Offline Fusion Lab Teaching Practice Through Cross-university Cooperation Yanpin Ren
34199	A study on effectiveness of Frequently Asked Questions in asynchronous mode of delivery Radhika Amashi
34273	Students' perspectives on online delivery methods for programming courses: a survey-based study during COVID-19 Amr Hassan
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34255	Challenges of database teaching amidst the covid-19 pandemic. Ian Nery Bandeira
33669	Reinforcing Cybersecurity Hands-on Training With Adaptive Learning Pavel Seda
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34128	The development and validation of a framework for teaching software engineering through startup practice in higher education Orges Cico
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33749	Science and technology fields and higher education institutions with mathematically trained contributors: Metadata analysis of IEEE papers Takashi Ikegawa

34070	Computer and Materials Sciences convergence for the creation of technology-based learning resources and new curriculum developments Maria E. Romero-Gonzalez
34403	Content analysis of the Faculty of Technology's curriculum - addressing the dimensions of multidisciplinary, industry collaboration and sustainability Carolina Islas Sedano
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34564	What Role Should Character Education Play in Engineering Education? A Special Session to Rethink How We Educate the Whole Engineer Olga Pierrakos
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34363	What are BME employers looking for in new hires? A Qualitative Synthesis Cassandra Jamison
34043	First-Year Engineering Students' Reflections: Plans and Actions for Meeting Course Learning Objectives Kayla Ney
34789	How to measure the innovativeness and entrepreneurship features of a curriculum? Asad Azemi
34083	An Engineering Computational Thinking Diagnostic: A Psychometric Analysis NOEMI V MENDOZA DIAZ
34215	ABET Cybersecurity Continual Course Improvements for Secure Software Development Suzanna Schmeelk
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33697	WIP: Using SQL to query the difficulty imposed by spaced retrieval in engineering mathematics Campbell Bego
34324	Examining the Influence of a Professional Development Program on High School Counselors' Practices Regarding Engineering Jacob Roarty
34337	A literature overview of differences between engineering education and other disciplinary education Maartje Van den Bogaard
34511	Creation of a Theoretical Framework that Integrates Technical Innovation and Learning in Engineering Lauren Singelmann
Session T3D: Online Learning & Teaching <i>October 14 at 02:00 PM</i>	
34300	SlideSpace: Social Realtime Learning System (SRLS) Richard Gessner
34121	Convergence in Collaborative Course Design while Remaining Virtual Shawna Thomas
33873	Student Engagement in Online Software Engineering Course Bruce Maxim
34394	Disconnected Engineering Education Mani Mina
34640	Engineering Instructors' Self-Reported Emotions During Emergency Remote Teaching Abeera Rehmat
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34250	Designing training activities for a new PhD program in Engineering Education David Lopez
34072	Professional Development for High School Computer Science Teachers on Data Science through a Feminist Lens Anna Baynes
34130	Professional Development in Computational Thinking for teachers in Colombia Alejandro Espinal
34207	Employee Development Program: A Generation Model for Project-based Learning Implementation at the University Vasilii Borisov

34417	Adoption of Pedagogical Innovations: Resource Networks of Engineering Education Guilds Darby Riley
Session T3F: Diversity & Broader Participation <i>October 14 at 02:00 PM</i>	
34662	Women in STEM: How can we understand and support their career development? Jeri Childers
34752	A novel Collaborative Online Robotics Platform to address engagement and social emotional challenges in remote learning environment Olga Sans-Cope
34218	Predicting at-risk Students to Facilitate Scaffolding Instructions Qiong Cheng
34470	Use of AI-Generated Visual Media in Interviews to Understand Power Differentials in Gender, Romantic, and Sexual Minority Students Madeleine Jennings
34415	Student-Faculty Interactions to Promote Equity in Engineering Vandana Pamulapati
34428	Promoting Game Jams and Hackathons as more Women-inclusive Environments for Informal Learning Lavinia Paganini
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34463	An Approach to Developing Competency Models for Programming Courses Ryan Delane
34109	Promoting Code Quality via Automated Feedback on Student Submissions Oscar Karnalim
34123	Incorporation of the Internet of Things within the Introductory Course on Microcontrollers Steven Rowland
34357	How Do Students Feel About Automated Security Static Analysis Exercises? Akond Ashfaqur Ur Rahman
34438	A Method for Evaluating a Computing Program's Continuous Improvement Plan Abdullah Azzouni
34256	Teaching practice reforms towards software-hardware collaboration in computer system ability training-Taking FPGA Design course as an example YING LI
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34354	Lessons learned from FiTech Turku, a 18 million euros university collaboration project to complement the regional demand for Master degree engineers Timo Vasankari
34574	Conducting undergraduate research activities in a remote environment David Parent
34707	Investigating co-authorship, research themes, and funding streams for the Frontiers in Education community Rebecca Rosenblatt
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34748	A Metalearning Approach to Personalized Automatic Assessment of Rectilinear Sketches Laura Melissa Cruz Castro
34788	Application of Source Code Plagiarism Detection and Grouping Techniques for Short Programs Dylan Ryman
34761	Sketching Assessment in Engineering Education: A Systematic Literature Review Hillary Merzdorf
34445	Constructive Alignment of Learning Outcomes with Student Perceptions in a first-year Engineering Course Siddharth S. Kumar

Session T4C: Electrical Engineering & Data Science

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34596	PyRoboCar: A Low-cost Deep Neural Network-based Autonomous Car Yang Song
34533	Impact of human side of engineering approach in an undergraduate electromagnetic course Mani Mina
34406	Student challenges, strategies, and learning within the Data Mine Learning Community Joseph Lyon
34369	Work in Progress: Systemic Convergence Education in an Undergraduate ECE Program R. Alan Cheville
34106	Adopting Agility in Academia through Pilot Projects Omar Ochoa

Session T4D: Affective Domain

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34142	The effect of goal orientations and belief motivation on undergraduate engineering students' achievement Olanrewaju Olaogun
34504	Evaluation of an interactive Top Hat text for Engaged Learning Lee Dosse
34578	Mirror Mirror on the Wall - What Are Cybersecurity Educational Games Offering Overall: A Research Study and Gap Analysis Ankur Chattopadhyay
34196	What Motivates Engineering Students in IT in Bhutan to Learn Programming Anders Berglund

Session T4E: Active Learning

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33654	Evaluating Factors for Effective Flipped Classroom Instruction in an Advanced Data Management Course Shamima Mithun
34164	Design and Supervision Model of Group Projects for Active Learning Yi Meng Lau
34435	Scalable Learning Environments for Teaching Cybersecurity Hands-on Jan Vykopal
34626	An Experiential Approach to Support Learning of Cyber Physical Systems Concepts involving Mixed Reality Platforms J. Cecil
34711	PACT: A Citizen Science Project for Computing Education Braz Araujo Da Silva Junior
34242	Building a Motivating and Autonomy Environment to Support Adaptive Learning Qiong Cheng

Session T4F: Diversity & Broader Participation

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34064	Equity of Voice in the Classroom Eileen Cashman
34468	Students' tensions in challenge-driven collaboration across cultures Linda Barman
33763	First in My Family: A Comparison of Subject-Related Role Identities of First-Generation and Continuing-Generation College Students by Gender Dina Verdin
33853	Understanding How Family Influences and Support Students' Certainty of Engineering Major Heather Perkins
33906	A Systematic Literature Review on Teaching Programming to People with Cognitive Disabilities Elaine Cristina Juvino de Araújo
34277	Sense of Belonging of Female Undergraduate Students in Introductory Computer Science Courses at University of Brasília in Brazil Maristela Holanda

Session T4G: Online & Learning Technologies

October 14 at 04:00 PM

34059	Interactive Video Enhanced Tutorials: A Tool for Promoting Self-Paced Learning and Engagement for Future Engineers Kathleen Koenig
34266	Designing Pedagogical Agents Toward the Recommendation and Intervention Based on Students' Actions in an ITS Arcanjo Miguel Mota Lopes
34267	Software Quality as a Subsidy for Teaching Programming Rogério Eduardo Garcia
34281	Converging Digital Literacy through Virtual Reality Mark Frydenberg

34499	Usage of zyBooks' Customizable Content: Implications for Engineering and Computer Science Publishing Chelsea Gordon
Session T4H: First Year October 14 at 04:00 PM	
34418	The Relationship Between Empathy and Civic-Mindedness in First-Year Engineering Students Athena Lin
34252	Integrating cooperative learning principles into engineering design process: A mixed methods study at first-year undergraduate engineering Preethi Baligar
34427	Engineering Faculty Experiences Teaching Social Justice to First Year Students Jill Davishahl
34433	Understanding Career Identity Development and Preparedness of Freshmen Students to Leverage Convergence in Engineering Education VICTOR M GARCIA JR
34627	Assignment Presentation Framework for CS1 Programming Problems Rita Garcia
Session F1A: Special Session - Towards a Community Vision of Integrated Engineering October 15 at 08:00 AM	
34305	Towards a Community Vision of Integrated Engineering Susan M. Lord
Session F1B: Diversity & Broader Participation October 15 at 08:00 AM	
34140	Student Success Analysis from Running a Pre-College Computer Science and Math Summer Program Jaime Raigoza
34422	Navigational Capital for Minoritized Students in Engineering at a PWI Stephanie Damas
34494	System factors affecting Underrepresented minorities in doctoral programs in engineering: a Literature Review Neirouz Bouhrira
34763	Engineering instructional faculty perceptions of students' backgrounds at Hispanic-Serving Institutions Valerie Bracho
34739	A Study of Variations in Motivation and Efficacy for Computational Modeling in first-year Engineering Students Alison Polasik
Session F1C: STEM Teaching & Learning October 15 at 08:00 AM	
33655	Scoping Design Parameters for Educational Software Development with the Entrepreneurial Mindset John Estell
33912	The Investigation of Logistic Regression Methods Applied to Engineering Education using Project Based Learning for Airport Safety Designs Weiwei Zhu
34144	"We Make the Village" - Inspiring STEM Among Young Girls and the Power of Creative Engineering Education in Action Kayli Battel
34510	Duality as a Central Organizing Theme in Linear Circuit Analysis Instruction Brian J. Skromme
34454	Zen and the Art of STEAM: Student Knowledge and Experiences in Interdisciplinary and Traditional Engineering Capstone Experiences Dominique Dredd
Session F1D: Applied Learning Theory October 15 at 08:00 AM	
33627	Integrated Discourse Analysis & Learning Skills Framework for Class Conversations Swapna Gottipati
34114	Evaluation of a Learner-Centered Activating Learning Situation with Large Cohorts in the University Matthias Haack
34172	Methodology Matters: Employing Phenomenography to Investigate Experiences in Computing Fields and the Application of Theoretical Frameworks Stephanie Lunn
34229	Student and expert conceptions of the word "efficiency" Eric Burkholder
34290	"Seeing the voice of the student": How can we update customer-driven courses? Orges Cico
34304	Analysis of Learning Behavior in a Programming Course using Process Mining and Sequential Pattern Mining Eduardo Real
Session F1E: Active Learning October 15 at 08:00 AM	

34663	Active Listening for Engineering Students David Novick
34737	The use of interactive screencasts to promote active and engaged learning in the Further Education mathematics classroom: A descriptive case study from North East England Raphael Eichie
34755	Fostering Digital Literacy through Active Learning in Engineering Education Patricia Caratozzolo
34791	Enhancing Interactive Learning in Engineering Classes by Implementing Virtual Laboratories Maziar Ghazinejad
34219	Use of active methodologies for the development of a teaching plan for the algorithms subject Sandro Ronaldo Bezerra Oliveira
Session F1F: Online Learning & Teaching <i>October 15 at 08:00 AM</i>	
34116	Learner-Centered Distance Education: Effects of Online Learning on the Self-Driven Learning Office Approach Alexandra Posekany
34131	Adapting an OER Textbook for the Inverted Classroom Model – How to Flip the Classroom with BBC micro:bit Example Tasks Oliver Kastner-Hauler
34270	Is Remote Learning Becoming the New Norm? A Survey-based Study on the Causes Behind the Poor In-person Classroom Attendances During the Pandemic. Mohamed Zaghloul
34276	A survey-based study of students' perspectives on remote electronics and electronics lab courses during COVID-19 Mohamed Zaghloul
34286	Predicting student performance based on logs in Moodle LMS Mariela Mizota Tamada
Session F1G: Online & Learning Technologies <i>October 15 at 08:00 AM</i>	
34097	Experiences with Web-based Signal Analysis Laboratories and Online Training during the COVID-19 Period Andreas Spanias
34284	A gamification to support teaching-learning of knowledge management in information technology: a plan based on features of pedagogical approaches Sandro Ronaldo Bezerra Oliveira
34312	VIOT_Lab: A Virtual Laboratory for Internet of Things Based on ThingsBoard Platform Francesco Colace
34397	Presenting Do-it, a method to teach students how to perform systematic mappings - A example case of its first use Pasqueline Dantas Scaico
34618	Zoom Experiences in Higher Education: helping college students build data visualization capacity remotely Vetria Byrd
Session F1H: Affective Domain <i>October 15 at 08:00 AM</i>	
34249	The Effect of the Covid-19 Epidemic on the Self-perception of Training Needs in STEAM Lecturers David Lopez
34257	Novice Programming Students' Reflections on Study Motivation during COVID-19 Pandemic Meija Lohiniva
34440	Does Self-Efficacy Correlate with Positive Emotion and Academic Performance in Collaborative Learning? Nasrin Dehbozorgi
34474	Educating Social Engineering Penetration Testers: A Psychological Perspective Ida Ngambeki
34513	Online Yet More Personal: Professors Respond to the COVID-19 Crisis Elizabeth Briody
34366	A Neuro Control T&L Framework for Improving Learning and Retention in Higher Education Dr. Nabeel Murshed
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34771	Starting with the Promises: Moving from inspirational words to institutional action in addressing systemic racism Brooke Coley
Session F2B: Computing <i>October 15 at 10:00 AM</i>	
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34160	Including Computer Systems Assignments in Introductory Programming Courses Christine Reilly

33925	Matthew Effects in Learning Computer Programming Concepts Candido Cabo
33942	Integrating Programming and Engineering Concepts using Raspberry Pi and Scratch Sujing Wang
Session F2C: Online & Learning Technologies <i>October 15 at 10:00 AM</i>	
34230	Systems Engineering Education Ecosystem (SEEE) Portal Jon Wade
34292	Analyzing Competences in Software Testing: Combining Thematic Analysis with Natural Language Processing (NLP) Tajmilur Rahman
34297	Enhancing the Intelligence of the Adaptive Learning Software through an AI assisted Data Analytics on Student Learning Attributes with Unequal Weight Yanzhen Qu
34213	A Systematic Review of Literature on the Effectiveness of Intelligent Tutoring Systems in STEM Shi Feng
34212	The Effect of ElectronixTutor on Undergraduate Students' Acquisition of Conceptual Learning, Problem Solving, and Model Building Shi Feng
Session F2D: Assessment <i>October 15 at 10:00 AM</i>	
34090	Automation of assessment and feedback in IT teaching from the teaching staff perspective Eerik Muuli
34077	Revisiting the Definition of Overpersistence Baker A. Martin
34103	Student Assessment in PBL-Based Teaching Computing: Proposals and Results Simone C. dos Santos
34333	Transforming a Course with a Traditional Evaluation into a Competency-Based Assessment Approach: a Practical Experiment Sébastien Combéfis
34351	Mutual Improvement between Teaching Materials and Assessment Tools for K-12 Programming Education Hideo Nagumo
Session F2E: Personal & Professional Development <i>October 15 at 10:00 AM</i>	
34727	Time as challenge for Higher Education Institutions and Firms Rosa Vasconcelos
34157	InVEST: Equipping Engineering students with professional competencies and Interpersonal skills. Anuli Ndubuisi
34515	Quality Models for Open Educational Resources: a systematic mapping Myke Morais de Oliveira
34560	Highlighting the Barren Landscape of Postdoctoral Resources: A Content Analysis of University Websites Catherine Berdanier
34685	Faculty Development Model for Mentoring Interdisciplinary Engineering Projects Unnati Koppikar
Session F2F: Gamification <i>October 15 at 10:00 AM</i>	
33996	Teaching HPC Concepts with Serious Games Lauren Milechin
34025	Learn Access Control Concepts in a Game Jinghua Zhang
34089	Lessons Learnt Conducting Capture the Flag CyberSecurity Competition during COVID-19 Tan Kee Hock
34287	Pair- versus solo-programming of mini-games as a setting for learning to program: An Action Research approach Arash Issaee
34167	A standard framework for gamification evaluation in education and training of software engineering: an evaluation from a proof of concept Sandro Ronaldo Bezerra Oliveira
Session F2G: Online & Learning Technologies <i>October 15 at 10:00 AM</i>	
34605	Role of Affordance, Visual Density and Other HCI Criteria in Designing Virtual Learning Environments to Support STEM Learning for Autistic Students J. Cecil
34767	A Remote/Virtual Robotics Lab R. Pito Salas

34327	Make experimental device to be a toy - the experimental teaching in Digital Logic Circuit course Shanshan Li
34477	Using Discord as an Extension of the Emergency Remote Teaching Classroom during the COVID-19 pandemic Carlos Silla
34576	Kitsune: Structurally Aware and Adaptable Plagiarism Detection Ajay Bansal
Session F2H: Capstone & Design <i>October 15 at 10:00 AM</i>	
34177	A study on assets applied in exploratory test design and execution: an interview application Sandro Ronaldo Bezerra Oliveira
34231	Peer-Mentoring in design projects in a project-based learning (PBL) at First-Year Engineering Course Jyoti Gadad
34593	Integrating Environmental Impact and Globalization into Senior Capstone Courses in Mechanical Engineering Patricia Backer
34245	Integration of Information Technology Certifications into Undergraduate Computing Curriculum Ouh Eng Lieh
34341	Using Futures Studies in Computing and Engineering Education: "Emergentist Education" in an Open-Ended Group Project Anne-Kathrin Peters
34349	DEVELOPMENT OF AN EXTENDED CONSTRUCTIVE ALIGNMENT MODEL FOR REDESIGNING COURSES TO FIT DISRUPTED CONTEXTS Imane Aboutajedyne
Session F3A: Special Session - Curriculum Agility – Responsive Organization, Dynamic Contents and Flexible Education <i>October 15 at 02:00 PM</i>	
34062	Curriculum Agility – Responsive Organization, Dynamic Contents and Flexible Education Suzanne Brink
Session F3B: Personal & Professional Development <i>October 15 at 02:00 PM</i>	
33937	SWOT Analysis of Two Different Designs of Summer Professional Development Institutions for K-8 CS Teachers Leen-Kiat Soh
34015	Integrating makerspaces into the curriculum - faculty development efforts Maria-Isabel Carnasciali
34169	Developing and Implementing an Aerospace Macroethics Lesson in a Required Sophomore Course Aaron Johnson
34518	Learning and Professional Development Through Integrated Reflective Activities in Electrical and Computer Engineering Courses Diane Rover
34050	Introducing Undergraduates to Restricted Research Alan Michaels
Session F3C: STEM Teaching & Learning <i>October 15 at 02:00 PM</i>	
34699	Using the S-STEM programmatic lens to investigate equity in a computer science department Sarah Hug
34398	Let Me See What I Could Do': Students' Epistemic Affect When Solving Open-ended, Real-world Problems Jessica Swenson
34492	Creating Biologically Inspired Design Units for High School Engineering Courses Roxanne Moore
34731	Teachers' Perspective on Implementing Computational Thinking in Elementary Classrooms Shi Feng
Session F3D: Online Learning & Teaching <i>October 15 at 02:00 PM</i>	
34344	Election Security in the Cloud: A CTF Activity to Teach Cloud and Web Security Jennifer Windsor
34188	Peer Instruction in Online Synchronous Software Engineering – Findings from fine-grained clicker data Bhuvaneswari Gopal
34210	Framing self-organized online team collaboration in a higher education course on Informatics and Society Thomas Spielhofer
34336	Facilitating Interpersonal Exchange on Digital Transformations by Anchoring a MOOC in a Distance-Learning University Course David Haselberger
34615	Challenges and Successes of Engineering Instructors when Forced to Deliver Courses Remotely Grace Panther

Session F3E: Student Perspectives

October 15 at 02:00 PM

34380	Student Emotional Response to Oral Assessments in Computing and Mathematics Jeremiah Johnson
34076	Exploring students' stereotypes regarding computer science and stimulating reflection on roles of women in IT Oswald Comber
34241	Investigating Learners' Behaviors and Implementing Intervention in a SPOC Zihao Zhong
34521	Analyzing college students' interaction records towards improving retention and graduation outcome. Hui Yang
34278	First-Year Engineering Student Reflections on Service Learning: The EWB Australia Challenge Amanda Singer

Session F3F: Diversity & Broader Participation

October 15 at 02:00 PM

33993	Confidence in Pursuing Engineering: How First-Generation College Students' Subject-related Role Identities Supports their Major Choice Dina Verdin
34137	Exploring Factors that Influence Underrepresented Students to Persist in Computer Science Noura Albarakati
34138	Addressing Challenges of Community and Academics for CS Pre-Majors: CS Redshirt Program Gerald Gannod
34206	Educational Initiatives to Increase Diversity in CS1 Courses: A Literature Mapping of U.S. efforts Maristela Holanda
34551	"The Undergraduate Engineering Collaborative Growth Series": a diversity, equity, and inclusion program supporting the empowerment of marginalized students Corin L. Bowen

Session F3G: Computing

October 15 at 02:00 PM

34442	What Makes Computational Thinking so Troublesome? Arnold Pears
33482	BlocklyPar: from sequential to parallel with block-based visual programming Ana Luisa Veroneze Solórzano
34118	Evaluating Augmented Reality for Wireless Network Security Education Martin Striegel
34136	How do Bebras Tasks Explore Algorithmic Thinking Skill in a Computational Thinking Contest? Ana Liz Souto Oliveira
34153	Source Code Plagiarism Detection in Educational Context: A Literature Mapping Rodrigo Aniceto
34165	Teaching and learning strategies for software process subject Sandro Ronaldo Bezerra Oliveira

Session F3H: Culture of Teaching & Learning

October 15 at 02:00 PM

34048	A Scientometric Journey Through the FIE Bookshelf: 1982-2020 Matti Tedre
34113	Factors Motivating Engineering Faculty to Adopt and Teach New Engineering Technologies. Michelle Jarvie Eggart
34780	Gendered Learning: How Constructs of Knowledge Impact Engineering Students' Sense of Belonging Yevgeniya V. Zastavker
34743	Baskin Engineering Excellence Scholars Bridge Program: Planning, Implementation, and Evaluation Narges Norouzi
34507	Cultivating an Additive Innovation Culture through the Communal Observations of New EXperiences in Teaching (CONEXT) Protocol Cecilia La Place

Session F4A: Special Session - Is MIDFIELD for me? Exploring the Multiple Institution Database for Investigating Engineering Longitudinal Development

October 15 at 04:00 PM

34274	Is MIDFIELD for me? Exploring the Multiple Institution Database for Investigating Engineering Longitudinal Development Susan M. Lord
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Session F4B: Personal & Professional Development

October 15 at 04:00 PM

34171	"Design-based" Instruction – Teaching Engineering Design in the Context of Practice Shirley Fleischmann
34239	Training a new generation of solar developers with the latest tools and practices provided by NREL professionals: The UPRM experience.

	Cristian R. Melendez Gonzalez
34493	Using Structure, Function, and Mechanism to Access Biological Analogies: Experiences from High School Engineering Teachers' Professional Development Roxanne Moore
34000	Agile Methods in Higher Education: Adapting and Using eduScrum with Real World Projects Michael Neumann
34313	Moral Narratives of Practicing Engineers across Industry Sectors for Engineering Ethics Education Dayoung Kim
Session F4C: Cross- & Multi-Disciplinary Perspectives <i>October 15 at 04:00 PM</i>	
34134	Is This the Real Life? Exploring How Virtual Learning Environments Influence Engineering Identity Kelsey Scalero
34133	Create!: Student perceptions of an experiential and interdisciplinary course Yasir Gamieldien
34651	The evolution of the precollege E4USA (Engineering for us all) engineering curriculum Kenneth Reid
34392	Integrating Andragogy Theory into a Multidisciplinary Curriculum to Achieve a Connected Program for a Doctorate in Cybersecurity Andrew Hall
34182	Educators' Perceptions of the Influence of Academic Environment on Ethics Education: A Comparative Case Study of Two Engineering Departments Angela Bielefeldt
Session F4D: Online Learning & Teaching <i>October 15 at 04:00 PM</i>	
34738	Relationship between learning engagement metrics and learning outcomes in online engineering courses Tiantian Li
33660	Engaging undergraduate students in a biomedical research project: a virtual collaboration across institutes under the pandemic environment Yuezhou Wang
34569	Exploring the Impact of Emergency Online Instruction on Self-Directed Learning Readiness Mary Katherine Watson
34772	Student Preference: ONLINE or Face-To-Face Instruction in a Year of COVID-19 Jon Sticklen
34401	Driving Teaching and Learning in Online mode: A Case Study Divya Nalla
Session F4E: AI & Machine Learning <i>October 15 at 04:00 PM</i>	
34487	Multiagent System for Recommending Learning Objects in E-Learning Environments Thais Almeida
34498	From Advanced Digital Signal Processing to Machine Learning Jun Zhou
34540	Ad Adaptive Learning Path Builder based on a Context Aware Recommender System Francesco Colace
34590	Low Cost Platform for Teaching AI Self-Driving Cars Topics for Undergraduate Students in Emerging Countries Diego Arce
34657	Learning Autonomous Driving in Tangible Practice: Development and On-Road Applications of a 1/10-Scale Autonomous Vehicle Weitian Wang
34702	Survey of Resources for Introducing Machine Learning in K-12 Context. Ismaila Temitayo Sanusi
Session F4F: Gamification <i>October 15 at 04:00 PM</i>	
34101	Using Role-Plays to Improve Ethical Understanding of Algorithms Among Computing Students Aditya Johri
34217	Adding Interactivity to Education of Complex Wireless Networks Using Digital Game-Based Learning Seungmo Kim
34238	Development and Implementation of an Online Adaptive Gamification Platform for Learning Computational Thinking Andrew Keong Ng
34429	A Tool Supported Approach for Teaching Serious Game Learning Analytics Víctor Manuel Pérez Colado
34686	Work-In-Progress: What you see is what you get? – Relating eye tracking metrics to students' attention to game elements Kimberly Cook-Chennault
Session F4G: Computing <i>October 15 at 04:00 PM</i>	

33662	Evaluating Parsons Problems as a Design-Based Intervention Rita Garcia
34170	A diagnosis on software testing education in the Brazilian Universities Isaac Souza Elgrably
34183	A mapping of prescribed assets in the ACM / IEEE and SBC curriculum to the test design and execution practices of TMMi Sandro Ronaldo Bezerra Oliveira
34203	A Robotics-Based Learning Environment Supporting Computational Thinking Skills – Design and Development Oliver Kastner-Hauler
34240	A systematic literature review on knowledge tracing in learning programming Philip I.S. Lei
33951	Toolset for Collecting Shell Commands and Its Application in Hands-on Cybersecurity Training Valdemar Švábenský
Session F4H: Disciplinary <i>October 15 at 04:00 PM</i>	
34054	STEAM activities for civil engineering curricula. From Calculus to Digital Twins Rolando Chacón
34119	Pulse Oximetry - Teaching basic Electronic Sensor Signal Processing in a Medical Context Lukas Mennicke
34120	MotoShield: Prototype of an Open Motor Speed Control Hardware for Control Education Gergely Takács
34653	On Enhancing Application-Ability Training in Discrete Mathematics Tun Li
33703	Integrating an engineering justice approach in an undergraduate engineering mechanics course Daniel I. Castaneda
Session S1A: Panel - I2020: Competency-Based Information Systems Curriculum Guidelines <i>October 16 at 08:30 AM</i>	
34321	I2020: Competency-Based Information Systems Curriculum Guidelines Venky Shankararaman
Session S1B: Diversity & Broader Participation <i>October 16 at 08:30 AM</i>	
34718	Shifting Goals in Introductory and Advanced Computer Science Courses: The Effects of Gender and Major Markeya Peteranetz
34623	ASSETS: Fostering a community of engineering transfer students - best practices and beyond Ignatius Fomunung
34537	Helping Academically Talented STEM Students with Financial Need Succeed Amruth Kumar
34637	Descriptive Analytics Dashboard for an Inclusive Learning Environment Vladimir Costas-Jauregui
34208	Studying abroad: Experiences of Bhutanese IT Engineering Students Anders Berglund
Session S1C: Gamification <i>October 16 at 08:30 AM</i>	
33944	A Classification Scheme for Gamification in Computer Science Education: Discovery of Foundational Gamification Genres in Data Structures Courses Sherri Weidl Harms
34704	Exploring the Impact of Non-conventional Gamification Elements on Student Motivation and Engagement Lillian Cassel
34795	Use of games to teach teamwork and communication skills to engineering students Matthew Nelson
34115	Enhanced Student Engagement through Teamwork, Gamification, and Diversity & Inclusion Best Practices in an Electromagnetics Course Robert Kerestes
34034	Effects of Pair-Programming on Learning to Program with Visual- Versus Text-Based Languages Patrick Korber
Session S1D: Assessment <i>October 16 at 08:30 AM</i>	
34573	Analyzing Computer Science Students' Performance Data to Identify Impactful Curricular Changes Hui Yang
34387	A Correlative Analysis of Course Grades as Related to Curricular Prerequisite Structure and Inter-Class Topic Dependencies Johnathon Nash

34412	Developing a Comic-Creation Assignment and Rubric for Teaching and Assessing Algorithmic Concepts Charles Wallace
34672	A Customized and Automated Assignment Management and Marking System for Evaluating Student Performance in the STEM Disciplines Valentijn Pauwels
34728	Online Student Supervision: A Reflective Study on Lessons and Challenges Ali Ahmed
Session S1F: Online Learning & Teaching <i>October 16 at 08:30 AM</i>	
34191	Changing learning opportunities and outcomes with varying levels of remote and in-person engineering education outreach Kristen Okorn
34225	Design, Implementation, and Assessment of Synchronized Worldwide Online Robotics Competitions for Engineering and Computing Education Chan-Jin Chung
34293	Converting an Undergrad-Lab to an Interactive E-Learning Experience that Enables Student Teamwork Ferdinand Keil
34302	Oral Exams for large-enrollment engineering courses to promote academic integrity and student engagement during remote instruction Marko Lubarda
34460	Recommendation Model of Personalized Teaching Materials in E-Learning Environments Thais Almeida
Session S1G: Online & Learning Technologies <i>October 16 at 08:30 AM</i>	
34567	Mixed Reality Learning Environments in the Times of Pandemic: What Can We Learn? Yevgeniya V. Zastavker
34753	A Scrum-Based Method for Autonomous Learning Management Higor Oliveira
34785	An Architecture Model of Recommender System for Pedagogical Design Patterns Nasrin Dehbozorgi
34766	Online Access and Control of Laboratory Stations using Video Conference Systems Luis Felipe Zapata-Rivera
34768	Non-Intrusive Classroom Attention Tracking System (NiCATS) Andrew Sanders
34315	Web Tool For Assessing Students Motivation JACOB HUNT
Session S1H: Disciplinary <i>October 16 at 08:30 AM</i>	
34194	MATLABArduino.org: An Open-source Website and YouTube channel for Embedded Systems Education Pramod Abichandani
34479	Mapping the Landscape of Industrial Control Systems Cybersecurity: A Delphi Study Ida Ngambeki
34565	Arduino Baby Project: Robotics as a Tool to Support Permanence and Success of Technical Course Students in Informatics Joethe Carvalho
34652	Craft of Computing: Using a Novel Domain to Broaden Undergraduate Participation and Perceptions of Computing at the CS0 Level Emily Lovell
34544	My Robot can tell Stories: Introducing robotics to children using cultural dioramas Gayathri Manikutty
34674	Design the Future Activities (DFA): Typology of Content for Case Studies Hadi Ali
Session S2B: Diversity & Broader Participation <i>October 16 at 10:30 AM</i>	
34322	WIP: Building Design Experience and a Greater Sense of Community through an Integrated Design Project Yen-Lin Han
34200	Developing a Survey for Engineering Faculty Knowledge and Interest in Diversity, Equity, Inclusion Topics Stephen Secules
34299	Towards a Culturally Responsive Design Experience: How Students' Community Capital Contribute to their Design Approach Alexandra Coso Strong
34173	A Virtual Community of Practice for Enhanced Teaching and Convergence to Strengthen Student Learning, Engagement, and Inclusion Tracy Hammond
Session S2C: Student Perspectives <i>October 16 at 10:30 AM</i>	
34414	Insights into Power Relations from the Co-designing of Classroom Norms in Engineering Education between Students and Faculty

	Kenya Mejia
34458	Work in Progress: Student Responses to Homework Wrappers Carl Lund
34481	How Students Take Up Open-ended, Real World Problems Jessica Swenson
34676	The "Muddiest Point" in Undergraduate Research: A Survey on Students and Faculty about Existing Challenges Yuezhou Wang
34053	Why Don't You Tell Me What I Need to Know? Self-Flipped Classroom and Students' Personal Epistemology Mats Daniels
Session S2D: Applied Learning Theory <i>October 16 at 10:30 AM</i>	
34320	Thematic analysis of reflective peer feedback in programming-heavy engineering courses Abhimanyu Ghosh
34347	Towards the implementation of Circular Economy in Engineering Education: a Systematic Review Ivan Enrique Esparragoza
34360	Design Activity Worksheet: Identifying Data Sources for Developing a Research Plan Vetria Byrd
34386	Curricular Complexity of Student Schedules Compared to a Canonical Degree Roadmap Anthony M. DeRocchis
34683	Examining theoretical and pedagogical foundations of computational thinking in the context of higher education Friday Joseph Agbo
34708	A dramaturgical exploration of engineering judgment processes in undergraduate student writing Royce Francis
Session S2F: Online Learning & Teaching <i>October 16 at 10:30 AM</i>	
34248	Investigating Challenges of Student Centered Learning in Thailand Higher Education during the COVID-19 Pandemic Pornrat Wattanakasiwich
34275	A study of students' perspectives on different pedagogical practices for remote digital signal processing courses Ahmed Dallal
34342	Transition from In-Person Learning to Technology Enhanced Learning in Engineering Education-A Case Study Vijayalakshmi M
34579	Fully Remote Project-Based Learning of Hardware/Software Codesign Deepu John
34687	What Informal Learning Programs Teach Us About Adaptation in Contactless and Remote Learning Environments Kimberly Cook-Chennault
34462	Comparing Techniques for Building Community and Promoting Inclusion in the Virtual Undergraduate Engineering Classroom Bridget Benson
Session S2G: Computing <i>October 16 at 10:30 AM</i>	
34117	Engineering students' strategies to learn programming correlate with motivation and gender Maria Weurlander
34339	The importance of using the CodeInsights monitoring tool to support teaching programming in the context of a pandemic Nuno Gil Fonseca
34352	Static analysis model for assessing source codes with TFIDF Ricardo de Souza
34382	Estimating the multiple skills of students in massive programming environments with the TriMElo and TrueSkill models Fabiana Zaffalon
33691	Engineers' Situated Use of Digital Resources to Augment their Workplace Learning Ecology Aditya Johri
34329	A COVID-19 Teaching Experiment: Combining Competency-Based Assessment and Micro-Courses to Teach Technical and Non-Technical Skills Sébastien Combéfis