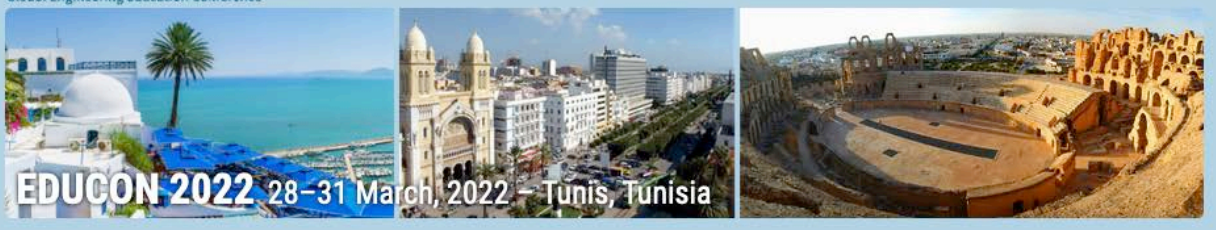
IEEE EDUCON
Global Engineering Education Conference



Session Overview

Date: Monday, 28/Mar/2022

10:00am - 12:00pm — **Conference Online Support Slot 1**

12:00pm - 12:30pm

Workshop 9: IEEE Xplore
Virtual location: Sidi Bou Said Room + Webex 1
Scientific Chair: **Salim RIFAI**, Naseej
Scientific Chair: **Mahmoud Awad**, Naseej

1:00pm - 2:00pm — **Lunch Break**

2:00pm - 4:00pm

Tutorial 3 (part 1): Modeling networks, grids, and clouds by colored Petri nets
Virtual location: Online Webex 5
Scientific Chair: **Dmitry A. Zaitsev**, Odessa State Environmental University

by Dmitry A. Zaitsev

Dr.Sci., Professor
Senior Member of ACM and IEEE
University of Information Technology and Management in Rzeszów, Poland
Odessa State Environmental University, Ukraine
Xidian university, X'ian, China
Supercomputación Castilla y León, Spain

Workshop 1: Using Geogebra to introduce Riemann Sums with National Certificate Vocational (NC(V) Lecturers; Technical Mathematics Teachers (Grade 11 and Grade 12 in SA) and University Calculus Lecturers and Teachers
Virtual location: Online Webex 6
Scientific Chair: **Batseba Mofolo-Mbokane**, University of the Witwatersrand

Workshop 2: Avenues for Sustainability Education in Electronic and Electrical Engineering
Virtual location: Online Webex 4
Scientific Chair: **Salma Alarefi**, University of Leeds

Workshop 4 (part 1): Linguistic and Cultural Diversities Challenges for International Students Esprit-School of Engineering- as a Reference of Inclusive Education
Virtual location: Sidi Bou Said Room + Webex 1
Scientific Chair: **Mayssa Souissi**, Esprit

Workshop 5: Publishing in Engineering Education Journals – IEEE Transactions on Education
Virtual location: El Jem Room + Webex 2
Scientific Chair: **John Mitchell**, UCL

Workshop 6: Teaching and Assessment of Systems Thinking in Undergraduate Engineering Education
Virtual location: Online Webex 3
Scientific Chair: **Rea Lavi**, Massachusetts Institute of Technology
Scientific Chair: **Aikaterini Bagiati**, Massachusetts Institute of Technology

2:00pm - 6:00pm — **Conference Online Support Slot 2**

4:00pm - 4:20pm — **Coffee Break**

4:20pm - 5:20pm

Workshop 8: Electrification, AI and the Future of Engineering Education
Virtual location: El Jem Room + Webex 2
Scientific Chair: **Carlos Sanchis**, MathWorks
Scientific Chair: **Mohammad Abuzayyad**, MathWorks

4:20pm - 6:20pm

Tutorial 1: DIY Remote and Hybrid Labs – for all budgets and technology levels!
Virtual location: Online Webex 4
Scientific Chair: **Adam Funnell**, University of Sheffield

Dr Adam Funnell, Multidisciplinary Engineering Education (MEE), University of Sheffield, UK

Tutorial 3 (part 2): Modeling networks, grids, and clouds by colored Petri nets
Virtual location: Online Webex 5
Scientific Chair: **Dmitry A. Zaitsev**, Odessa State Environmental University

by Dmitry A. Zaitsev

Dr.Sci., Professor
Senior Member of ACM and IEEE
University of Information Technology and Management in Rzeszów, Poland
Odessa State Environmental University, Ukraine
Xidian university, X'ian, China
Supercomputación Castilla y León, Spain

Workshop 4 (part 2): Linguistic and Cultural Diversities Challenges for International Students Esprit-School of Engineering- as a Reference of Inclusive Education
Virtual location: Sidi Bou Said Room + Webex 1
Scientific Chair: **Mayssa Souissi**, Esprit

Workshop 7: Teaching Analogical Reasoning for Creative Problem-Solving in Undergraduate Engineering Education
Virtual location: **Online Webex 3**
Scientific Chair: **Hazan Deniz Marti**, Harvard University
Scientific Chair: **Rea Lavi**, Massachusetts Institute of Technology

5:20pm - 6:20pm

Workshop 3: Improving STEM Learning Outcomes in Underserved Communities Through Computational Thinking: Challenges & Opportunities
Virtual location: **El Jem Room + Webex 2**
Scientific Chair: **Brenda Nyaringita**, IEEE
Scientific Chair: **Irvine Lumumba**, IEEE Kenya Section

Date: Tuesday, 29/Mar/2022

8:30am - 9:30am

Opening Session
Virtual location: **Sidi Bou Said Room + Webex 1**

- **Antonio Luque** (IEEE R8 Director)
- **Edmundo Tovar** (IEEE Education Society President)
- **Manuel Castro** (Steering Committee Chair)
- **Noureddine Dougui** (ALECSO)
- **Abdelwahed Mokni** (President University of Sfax)
- **Ministry of Higher Education and Scientific Research**

8:30am - 12:30pm

Conference Online Support Slot 1

9:30am - 10:30am

Keynote 1: Engineering Education at the Age of Industry 5.0
Virtual location: **Sidi Bou Said Room + Webex 1**
Scientific Chair: **Boutheina Tlili**, rit dubai

by **Okyay Kaynak**, UNESCO Chair on Mechatronics, Bogazici University, Turkey

10:30am - 11:00am

Coffee Break

11:00am - 1:00pm

GinEE: Games in Engineering Education - Special Session

Virtual location: **El Jem Room + Webex 2**
Scientific Chair: **Klaus-Tycho Förster**, TU Dortmund
Scientific Chair: **Isabel John**, FHWS

Toward a Game-like Experience: Design of a Modern User Interface of a Simulation Game for Teaching Business Process Digitalization
Borys Levkovskyi, Maksym Bondarenko, Marco Ring, George Strimbu, Matthias Christoph Utesch, Helmut Krcmar
Technical University of Munich, Germany

Promoting movement and strengthening arithmetic performance through gamification - The development of an IT-based learning app
Michelle Torres-Linke, Michelle Neumann, Marco Zielbauer, Clemens Drieschner, Matthias Christoph Utesch, Helmut Krcmar
Technical University of Munich, Germany

Learning by gaming: Improvement of User Experience of a Simulation Game for Teaching the Digital Transformation and its Administration Cockpit
Maksym Bondarenko, Ihor Kudryk, Borys Levkovskyi, Matthias Christoph Utesch, Helmut Krcmar
Technical University of Munich, Germany

Gamification for Software Engineering Students -an Experience Report
Isabel John, Tobias Fertig
FHWS, Germany

Teaching Solar Energy Systems Design using Game-Based Virtual Reality
Noor AlQallaf, Xinghao Chen, Yao Ge, Sajjad Hussain, Ahsan Khan, Ahmed Zoha, Rami Ghannam
University of Glasgow, United Kingdom

Game-Based Learning for Young Children: A Case Study
Nuno Gonçalo Coelho Pombo[1], Dorilene Lamas[2]
1: Universidade da Beira Interior, Portugal; 2: Universidade do Mindelo

L1: Infrastructure and Technologies for Engineering Education

Virtual location: **Sidi Bou Said Room + Webex 1**
Scientific Chair: **Reinhard Langmann**, Hochschule Düsseldorf University of Applied Sciences

Impersonating Chatbots in a Code Review Exercise to Teach Software Engineering Best Practices
Juan Carlos Farah[1], Basile Spaenlehauer[1], Vandit Sharma[2], María Jesús Rodríguez-Triana[3], Sandy Ingram[4], Denis Gillet[1]
1: École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland; 2: Eidgenössische Technische Hochschule Zürich (ETHZ), Zürich, Switzerland; 3: University of Tallinn, Tallinn, Estonia; 4: School of Engineering and Architecture of Fribourg, University of Applied Sciences (HES-SO), Fribourg, Switzerland

Flipped Classroom with Digital Circuits: An HTML5-based Interactive Simulation Tool
Jan Haase
Nordakademie, Germany

Educational Test-bed for Maintenance 4.0
Miguel Diaz-Cacho, Rene Lastra, Jorge Marcos, Alejandro Pereira
University of Vigo, Spain

From xc-MOOC to e-MOOC: A case study as a reference model and a proposed non-linear approach to an evolved MOOC
Ignacio Bugueño[1], Reinaldo Sperberg[2], Cesar Mathias[3], Alfonso Ehijo[1], Daniel Menares[2]
1: University of Chile, Chile; 2: Centro Cristiano Internacional, Ministerios Ebenezer; 3: Mobilbox, Chile

PenQuest Reloaded: A Digital Cyber Defense Game for Technical Education
Robert Luh[1,2], Sebastian Eresheim[1,2], Stefanie Größbacher[1], Thomas Petelin[3], Florian Mayr[1], Paul Tavolato[2], Sebastian Schrittwieser[2]
1: St. Pölten University of Applied Sciences; 2: University of Vienna; 3: ICS Information Systems

Reasoning Skills Assessment in Information Technology National Entrance Examination Reform; A Design Science Approach
Outi Tuulia Virkki
Haaga-Helia University of Applied Sciences, Finland

L2: Student-Centered Learning Environments

Virtual location: **Online Webex 3**
Scientific Chair: **Razzaqul Ahshan**, Sultan Qaboos University College of Engineering
Scientific Chair: **Bernhard Standl**, Karlsruhe University of Eduvation

Providing additional support in an introductory programming course
Marina Lepp, Joosep Kaimre
University of Tartu, Estonia

Personalized Micro-credentials based on Learning Analytics for reducing the gap University - Industry
Sami Ben Messaoud[1], Lilia Cheniti[2], Mounira Ilahi[3]
1: ISITCom, Tunisia; 2: ISITCom, Tunisia; 3: Tunis Business School, Tunisia

Identifying the Motivational Influences on Students' Choice of Engineering Major
Wassim Alexan
The German University in Cairo, Egypt

STEM Lab on Climate Change with Simple Hands-on Experiments
T.P. Nantsou, G.S Tombras
Department of Physics, Section of Electronic Physics, National and Kapodistrian University of Athens, Greece

Enhanced engagement through instructor-created interactive video assignments in a flipped electrical engineering classroom
Rajlaxmi Chouhan
Indian Institute of Technology Jodhpur, India

Analysis of dual and non-dual student learning outcomes and student dropout data
Erika Török, Eliza Angeli
John von Neumann University, Hungary

L3: K-12 STEM Education Initiatives

Virtual location: **Online Webex 4**
Scientific Chair: **Nizar Rokbani**, University of Sousse

A STEM intervention on Students' Attitudes Towards Science

L4: Gamification for Engineering Education

Virtual location: **Online Webex 5**
Scientific Chair: **Dr. Hamid Doost Mohammadian**, University of Applied Sciences (FHM)

Business Continuity & Disaster Recovery

L5: Lab concepts in Engineering Education

Virtual location: **Online Webex 6**
Scientific Chair: **Adam Funnell**, University of Sheffield
Scientific Chair: **Miguel X. Rodriguez-Paz**, Tecnologico de Monterrey

Elena Elliniadou, Chryssa Sofianopoulou
Department of Informatics and Telematics, Harokopio University of Athens, Greece

Pictoch: A Block-based Programming Learning Environment through Pictogram Content Creation
Kazunari Ito
Aoyama Gakuin University, Japan

Practical UML Programming based on the Executable UML Method at Secondary School Students
Maruyama Ryoga[1], Kayama Mizue[2], Nagai Takashi[3], Koki Otaku[2], Taguchi Naomi[4]
1: Graduate School of Science & TEchnology, Shinshu University, Japan; 2: Shinshu University, Japan; 3: Institute of Technologists, Japan; 4: Minowa Junior High School, Japan

Gradual and Tolerant Programming for Novices
Prerna Rao[1], Vaani Sundaresh[2], Varsha Venkatasubramanian[3], Supriya R[4], Viraj Kumar[5], N S Kumar[6]
1: GE Healthcare, India; 2: Disney+Hotstar, India; 3: Intuit, India; 4: PES University, India; 5: Indian Institute of Science, India; 6: PES University, India

Challenges in Teaching Assembly Language Programming — Desired Prerequisites vs. Students' Initial Knowledge
Robert Logozar, Miroslav Horvatic, Ivan Sumiga, Matija Mikac
University North, Varazdin, Croatia

MaS: Modeling At School – On the Benefits and Skill Development of the Use of Modeling Diagrams at School
Jesús Moreno-León[1], Cristian David Chushig[2], Gregorio Robles[2]
1: Programamos; 2: Universidad Rey Juan Carlos, Spain

(BC/DR) - A simulation game for holistic cyber security education
Christoph Lang-Muhr, Simon Tjoa, Stefan Machherndl, Daniel Haslinger
St. Poelten University of Applied Sciences, Austria

Cryptographic Algorithms and Computer Security Principles Gamification
Aysha Alkhoori, Latifa Alkaabi, Maitha Alshamsi, Wadha Alketbi, Saed Alrabaee
United Arab Emirates University, United Arab Emirates

Physical and Virtual Game Based Experiential Learning for Supply Chain and Operations Management Teaching Practice and Effectiveness
Ming-Der May
Lunghwa University of Science and Technology, Taiwan(R.O.C.)

Application of graph theory in teaching and understanding of the mathematical problems
Limonka Koceva Lazarova[1], Natasha Stojkovikj[2], Aleksandra Stojanova[3], Marija Miteva[4]
1: Goce Delcev University, North Macedonia, Republic of North Macedonia; 2: Goce Delcev University, North Macedonia, Republic of North Macedonia; 3: Goce Delcev University, North Macedonia, Republic of North Macedonia; 4: Goce Delcev University, North Macedonia, Republic of North Macedonia

arPcTECHture - gamified educational 3D virtual world for introductory concepts in computer architecture
Ana-Maria Ruscanu, Aurelia Ciupe, Serban Meza
Technical University of Cluj-Napoca, Romania

Teaching Expert Development Project by KOSEN Security Educational Community
Keiichi Yonemura[1], Hideyuki Kobayashi[2], Keiichi Shiraishi[3], Tatsuki Fukuda[4], Manabu Hirano[5], Hideaki Moriyama[6], Jun Sato[7], Hisashi Taketani[8], Shinya Oyama[9], Satoru Yamada[10], Satoru Izumi[11], Hiroyuki Okamoto[12], Youichi Fujimoto[13], Yoshinori Sakamoto[2], Kentaro Noguchi[2], Seiichi Kishimoto[14]
1: National Institute of Technology, Kisarazu College, Japan; 2: KOSEN; 3: National Institute of Technology, Kagawa College, Japan; 4: National Institute of Technology, Kitakyushu College, Japan; 5: National Institute of Technology, Toyota College, Japan; 6: National Institute of Technology, Ariake College, Japan; 7: National Institute of Technology, Tsuruoka College, Japan; 8: National Institute of Technology, Tsuyama College, Japan; 9: National Institute of Technology, Hakodate College, Japan; 10: National Institute of Technology, Ishikawa College, Japan; 11: National Institute of Technology, Sendai College, Japan; 12: National Institute of Technology, Anan College, Japan; 13: National Institute of Technology, Kumamoto College, Japan; 14: National Institute of Technology, Kochi College, Japan

Development and Assessment of a Web-based Platform for a hands-on Physics Lab teaching measurements and linear regression
Kyriacos Yiasemides, Katerina Zachariadou, Nikolaos Moshonas, Maria Rangoussi, Angelos Charitopoulos
Department of Electrical and Electronics Engineering, University of West Attica, Athens-Egaleo, GR-12241, Greece

International Innovative Labs – I-Living-Labs
Diana Andone, Radu Vasiu, Razvan Bogdan, Vlad Mihaescu, Silviu Vert, Alexandru Iovanovici, Valentin Ciupe, Florin Dragan
Politehnica University of Timisoara, Romania

Linux, LaTeX, and Python in secondary and baccalaureate
Joan Verdaguer-Codina
Consultant, Spain

Hybrid approach for e-learning in Electric and Electronic Circuits laboratory courses
Guilherme P. Temporao, Ana M. B. Pavani
Pontifical Catholic University of Rio de Janeiro, Brazil

A Flexible Teaching Model with Digital Transformation Competences for Structural Engineering Courses
Miguel X. Rodriguez-Paz, Jorge A. Gonzalez-Mendivil, Israel Zamora-Hernandez, Martha E. Nuñez
Tecnologico de Monterrey, Mexico

Augmented Reality as an enabling technology in the design of a workstation
Jorge A. Gonzalez-Mendivil, Miguel X. Rodriguez-Paz, Israel Zamora-Hernandez
Tecnologico de Monterrey, Mexico

1:00pm - 2:00pm **Lunch Break**

2:00pm - 3:00pm **Round Table 1: Communities and organizations of women in engineering: past, present and future (COWomEn)**
Virtual location: Sidi Bou Said Room + Webex 1
Scientific Chair: **Alicia García-Holgado**, University of Salamanca
Scientific Chair: **Carina González**, University of La Laguna
Technical Chair: **Aruquia Peixoto**, CEFET/RJ

2:00pm - 6:00pm **Conference Online Support Slot 2**

2:30pm - 3:00pm **Workshop 10: IEEE Authorship**
Virtual location: El Jem Room + Webex 2
Scientific Chair: **Ranbir Singh Sedhey**, IEEE

3:00pm - 4:40pm

L10: Non-traditional Lab concepts
Virtual location: Online Webex 6
Scientific Chair: **Hamadou Saliah-Hassane**, TELUQ University

Virtual labs: 5 ways to connect with Factory IO for mechatronics engineering courses
Roberto J. Mora-Salinas, Hugo G. González-Hernández
Tecnologico de Monterrey

Implementation of an environmental laboratory workshop as part of distance learning
Iliya Sheinman[1], Alexey Sokolov[1], Danil

L6: Student-Centered Learning Environments
Virtual location: Sidi Bou Said Room + Webex 1
Scientific Chair: **Isabel John**, FHWS

Integrated Model for Comprehensive Digital Education Platforms
Denis Gillet[1], Isabelle Vonèche Cardia[1], Juan Carlos Farah[1], Kim Lan Phan Hoang[1], María Jesús Rodríguez-Triana[2]
1: EPFL, Switzerland; 2: Tallinn University

The SM-TMC (South Mediterranean Tunisian Maintenance Centre of Excellence) project
René Lastra Cid[1], Miguel Diaz-Cacho[1], Alejandro

L7: Mastering Digitalization and Artificial Intelligence
Virtual location: Online Webex 3
Scientific Chair: **Dr. Hamid Doost Mohammadian**, University of Applied Sciences (FHM)

Conversational Intelligent Tutoring Systems for Online Learning: What do Students and Tutors Say?
Siyuan Ji, Tangming Yuan
University of York, United Kingdom

Career Counseling Chatbot using Microsoft Bot Frameworks
Miruna Cont[1], Aurelia Ciupe[1], Bogdan Orza[1],

Ostapchuk[1], Alla Kovalevskaya[1], Irina Vezhenkova[1], Taras Kustov[1], Rafael Jimenez Castañeda[2], Maria Rocio Barroso[2]
1: Saint-Petersburg Electrotechnical University, Saint-Petersburg, Russia; 2: University of Cadiz, Cadiz, Spain

Hands-on Experiments in Electricity for Physics Teachers and Students

T.P. Nantsou, G.S Tombras
Department of Physics, Section of Electronic Physics, National and Kapodistrian University of Athens, Greece

An Electric and Electronic Circuit Remote Laboratory in a Control Course

Ana Pavani, William Barbosa
Pontifícia Universidade Católica do Rio de Janeiro, BR, Brazil

Remote Practical Work Environment based on Containers to replace Virtual Machines

Lamine Yade, Amadou Dahirou Gueye
Alioune Diop University of Bambey (Senegal), Senegal

Pereira Domínguez[1], Jorge Marcos Acevedo[1], Eva Garea Oya[1], Mohamed Belhaj[2]
1: University of Vigo, Spain; 2: University of Sfax, Tunisia

Using CDIO Principles for Teaching of Mechanical Design Courses

Farooq Al Jahwari, Sayyad Zahid Qamar, Tasneem Pervez, Nasra Al Maskari
Sultan Qaboos University, Oman

Programmable Hardware BBC micro:bit as a Tool for Developing Teacher Competencies.

Martin Cápay[1], Nika Kvaššayová[1], Magdaléna Bellayová[2], Marek Mansell[3], Štefan Petrík[4]
1: Constantine the Philosopher University in Nitra, Slovakia; 2: eTeacher o.z, Slovakia; 3: Slovak University of Technology, Slovakia; 4: Jan Evangelista Purkyně University, Czech republík

Self-Assessment tool with topic-driven navigation for algorithms learning

Fernando López-Ostenero, Laura Plaza, Lourdes Araujo, Juan Martínez-Romo
Universidad Nacional de Educación a Distancia (UNED), Spain

Georgiana Nițu[2], Irina Cohuț[1]
1: Technical University of Cluj-Napoca, Romania; 2: Microsoft Romania

Internet of Things Meets Machine Learning: A Water Usage Alert Example

Dimitrios Loukatos[1], Kalliopi-Argyri Lygkoura[1], Stavroula Misthou[2], Konstantinos G. Arvanitis[1]
1: Agricultural University of Athens, Greece; 2: GreekCodersK12 Coding Club

Implementation of BIM and game engines for engineering online learning

Benjamin Sanchez, Romeo Ballinas-Gonzalez, Miguel X. Rodriguez-Paz
Tecnologico de Monterrey, Mexico

The Development of a Readiness Assessment Framework for Tomorrow's SMEs for Adopting the Educational Components of future of I4.0

Prof. Dr. Hamid Doost Mohammadian[1], Manuel Castro[2], Volker Wittberg[3], Abolfazl Kiani Bakhtiari[4], Tim Brüggemann[5]
1: University of Applied Sciences (FHM), Germany; 2: National Distance Education University (UNED), Spain; 3: University of Applied Sciences (FHM), Germany; 4: Industrial Management Institute (IMI), Iran; 5: University of Applied Sciences (FHM), Germany

L8: Women for leadership in Engineering

Virtual location: **Online Webex 4**
Scientific Chair: **Diana Andone**, Politehnica University of Timisoara
Scientific Chair: **Isabel Maria João**, ISEL - Instituto Superior de Engenharia de Lisboa, IPL, Portugal

A Course Design for Teaching Leadership Skills

Veronika Thurner
Hochschule München University of Applied Sciences, Germany

An Effective Methodology for the Attraction of Students into Engineering Programs for Post-Covid Normality

Israel Zamora-Hernandez, Miguel X. Rodriguez-Paz, Jorge A. Gonzalez-Mendivil
Tecnologico de Monterrey, Mexico

Beautiful patterns" MIT and Tec de Monterrey International Bootcamp: engineering women students teaching IT to high-school women students

Juan-Manuel Campos, Leticia Almaguer, Lamberto Alvarez, Laura Elena Morales
Tecnológico de Monterrey, Mexico

Fab Lab-based learning: an environment to promote Women and Leadership in Engineering Education

Pablo C. Herrera[1], Cristina Dreifuss-Serrano[2], Macarena Valenzuela-Zubiaur[3], Vaneza Caycho[4]
1: Universidad Peruana de Ciencias Aplicadas, Perú; 2: Universidad de Lima, Perú; 3: Universidad Tecnológica Metropolitana, Chile; 4: Fab Lab Lima, Perú

Women Empowering Women: A mentoring program

Araceli Zavala, Ana Esquivel, María Jose Gutierrez, Guadalupe Lomelí Plascencia, Olga García, Georgia García-Arellano
Tecnologico de Monterrey, Mexico

L9: Game-Based Learning

Virtual location: **Online Webex 5**
Scientific Chair: **Abel Nyamapfene**, University College London

A cybersecurity competition to support the autonomous, collaborative, and personalized learning in computer engineering

Borja Bordel, Ramón Alcarria, Tomás Robles
Universidad Politécnica de Madrid, Spain

Clustering Young Children's Coding Project Scores with Machine Learning

Apittha Unahalekhaka, Marina Bers
Tufts University, United States of America

Learn Programming In Virtual Reality? A Case Study of Computer Science Students

Benjamin Alexander, Yunfei Hou
California State University, San Bernardino, United States of America

Software engineering students' perceptions for a 3D Learning environment regarding anxiety.

Andreas Mallas, Semira Maria Evangelou, Michalis Xenos
University of Patras, Greece

Teaching effective Cybersecurity through Escape the Classroom Paradigm

Joan E. DeBello, Suzanna Schmeelk, Denise Dragos, Laura M. Truong, Erald Troja
St. John's University, United States of America

Metaverse-Edu: Morphing to an Educational Metaverse - Special Session

Virtual location: **El Jem Room + Webex 2**
Scientific Chair: **Petros Lameras**, Coventry University
Scientific Chair: **Jose Ferreira**, University of South-Eastern Norway

A Vision of Teaching and Learning with AI

Petros Lameras
Coventry University, United Kingdom

ArSL21L: Arabic Sign Language Letter Dataset for Metaverse

Ganzorig Batnasan[1], Munkhjargal Gochoo[1], Munkh-Erdene Otgonbold[1], Fady Alnajjar[1], Timothy K. Shih[2]
1: United Arab Emirates University; 2: National Central University

Prototype for Crowd-based Co-creation of Artificial Intelligence Natural Language Conversational Agents

Matthew Pears[1], James Henderson[1], Iraklis Tsoupouroglou[2], Panagiotis D. Bamidis[2], Eirini Schiza[3], Constantinos S. Pattichis[3], Natalia Stathakarou[4], Klas Karlgren[4], Stathis Th. Konstantinidis[1]
1: School of Health Sciences, The University of Nottingham, United Kingdom; 2: Medical School, Aristotle University of Thessaloniki, Thessaloniki, Greece; 3: CYENS Centre of Excellence, Nicosia, Cyprus; 4: Dept. of Learning, Informatics, Management and Ethics, Karolinska Institutet, Stockholm, Sweden

Identifying Success Criteria for Sustainable AI-based Online Laboratory Courseware System

Ahmed Mohamed Fahmy Yousef[1], Ahmed Mostafa Abdelkhaliq[2,3], Mahmoud M. Elmesalawy[2]
1: Fayoum University, Egypt; 2: Helwan University, Egypt; 3: British University in Egypt (BUE)

Work in Progress – Augmented Reality Smart Tele-Assisting Technology for Enhancing Engineering Education

Monica Racha, Siva Chandrasekaran
Swinburne University, Australia

4:40pm - 5:00pm **Coffee Break**

5:00pm - 7:00pm

L11: Attracting, Engaging and Retaining Human Talent to Engineering

Virtual location: **Sidi Bou Said Room + Webex 1**
Scientific Chair: **LESLIE PRICE MARTINICH**, Competitive Focus
Scientific Chair: **Majid Rouhani**, Norwegian University of Science and Technology

Design & Deployment K-12 Educational Robotics Activities in Tunisia Public Primary Schools.

Nizar Rokbani[1], Khaled Shabou[2], Karim Essifi[2,3]
1: University of Sousse, Tunisia; 2: Inspection of primary schools - Dar Chaabane II-Nabeul, Tunisia; 3: Mohamed Salah Ghodbane Primary School, Dar Chaabane, Nabeul, Tunisia

Using a Theory of Action to Define Effective Pre-University STEM Programs

Burton Dicht[1], Dawna Schultz[1], Stephen Baker[2], Sadiq Mitchell[1], Lynn Bowlby[1], Lorena Garcia[1,3]
1: IEEE Educational Activities; 2: Outlier Research and Evaluation, University of Chicago; 3: School of Engineering and Basic Sciences, Universidad Central

Computer Science Education in Angola: The Key Challenges

Geraldo Cangondo[1], Nuno Pombo[1], Leonice Pereira[1], Sofia Ouhbi[2], Bruno Silva[1]
1: Universidade da Beira Interior, Portugal; 2: United Arab Emirates University

Computer Science in Schools: A Literature Mapping of Professional Development for In-Service Teachers

Majid Rouhani[1], Monica Divitini[1], Amir Massoud Hashemi[2]
1: Norwegian University of Science and Technology, Norway; 2: Western Norway University of Applied Science

Student Success in Asynchronous STEM Education: measuring and identifying contributors to learner outcomes

David Smith[1], Aron Pasieka[1], Ralf Becker[2], Christina Perdikoulias[1]
1: Digital Education Company Ltd.; 2: The University of Manchester

Neural Network for Spam Recognition in Short Message Services as an Instructional Application for Students of Vocational Education and Training

Kontilenia Maria Kotsifakou, Dimitrios Kotsifakos, Christos Douligeris
UNIVERSITY OF PIRAEUS, Greece

L12: Data driven engineering education

Virtual location: **Online Webex 3**
Scientific Chair: **Tracy Craig**, University of Twente

Codifying Systematic Manuscript Preparation Checklists as a Training and Productivity Resource for Research Students

Paul Cuffe
University College Dublin, Ireland

Decreasing exam-anxiety levels with mindfulness through EEG measurements

Hugo G. Gonzalez-Hernandez, Dafne V. Peña-Cortes, A. Flores-Amado, Adriana Amozurrutia-Elizalde, Roberto J. Mora-Salinas
Tecnologico de Monterrey, Mexico

Enterprise Resource Planning integrated with Business Analytics in Higher Education

Zarine Cadersaib[1], Hatem Ben Sta[2], Baby Gobin Rahimbux[1]
1: Software and Information Systems Department, University of Mauritius Réduit, Mauritius; 2: University of Tunis at El Manar, Tunisia

IEEE Standards: Powering Innovation and your Career

Ernesto Vega Janica
IEEE Standards Association, United States of America

Statistical Analysis Methods in Engineering Education Research: A comprehensive state-of-the-art review

Yichao Wang, Hua Chai, Jayashri Ravishankar
School of Electrical Engineering and Telecommunications, University of New South Wales, Australia

Cyber-SoftBook: A Platform for CollaborativeContent Development and Delivery for Cybersecurity Education

Eniye Tebekaemi, Martin Zhao
Mercer University, United States of America

L13: Ethical challenge and engineering education

Virtual location: **Online Webex 4**
Scientific Chair: **Abel Nyamapfene**, University College London

5:00pm - 5:20pm

The Ethical Competency Development Framework

Lilia Carolina Rodriguez-Galvan, Eduardo Daniel Juarez, Jose Manuel Velazquez
Tecnologico de Monterrey, Mexico

5:20pm - 5:40pm

Evaluation of First-Year Student's Learning of Engineering Ethics in a Blended PBL Course

Unnati Koppikar[1], Radhika Amashi[1], Vijayalakshmi M[1], Rohit Kandakatla[2], Preethi Baligar[1]
1: Centre for Engineering Education Research, KLE Technological University, India; 2: Department of Electronics & Communication, KG Reddy College of Engineering and Technology

5:40pm - 6:00pm

Coaching to support ethics learning in an interdisciplinary challenge-based learning course

Gunter Bombaerts, Diana Martin, Adam Watkins, Karolina Doulougeri
TU Eindhoven, Netherlands, The

6:00pm - 6:20pm

Structuring research experiences for undergraduate engineering students through research problems in engineering education

Preethi Baligar, Gopalkrishna Joshi, Ashok Shettar
KLE Technological University, India

6:20pm - 6:40pm

Personalized e-learning recommender system based on a hybrid approach

Wijdane Kaiss[1,2], Khalifa Mansouri[1], Franck Poirier[2]
1: Laboratory SSDIA, ENSET of Mohammedia, University Hassan II Casablanca, Morocco; 2: Lab-STICC, University Bretagne Sud, Vannes, France

6:40pm - 7:00pm

Risk Management for A Resilient and Sustainable Engineering Education

Salma Alarefi
University of Leeds, United Kingdom

L14: Diversity and Inclusion in Engineering Education

Virtual location: **Online Webex 5**
Scientific Chair: **Carina González**, University of La Laguna

Can Math Be a Bottleneck? Exploring the Mathematics Perceptions of Computer Science Students

Greg Alpár[1,3], Sabiha Yeni[2], Efthimia Aivaloglou[2,1], Felienne Hermans[2]
1: Open University of the Netherlands, The Netherlands; 2: Leiden University, The Netherlands; 3: Radboud University Nijmegen, The Netherlands

Challenge based Collaborative Online International Learning: A case of Mexico and Colombia.

Rubén Vázquez Esquivel[1], Alejandro Acuña López[1], Ana Sofía Zárate Álvarez[1], Marcela Romero García[1], Camilo Fabián Rojas Zapata[2]
1: Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico; 2: Fundación Universitaria Los Libertadores, Colombia

Path to Outcome Based Higher Education: An Analysis of Influence of Socio-demographic Factors on Student Engagement

Nazmun Nahar, Nazlee Siddiqui, Mohammad Sahadet Hossain, Ahmed Tazmeen, Khawaja Sazzad Ali
North South University, Bangladesh, People's Republic of

Developing Applications for Children With Special Needs Into a Project Based Learning

L15: Student-Centered Learning Environments

Virtual location: **Online Webex 6**
Scientific Chair: **Jorge Manuel Mendonça**, Polythechnic of Porto - School of Engineering

Developing disciplinary competencies in an "hybrid model" comparing "on-line" versus "face-to-face" interaction between students and lecturers

Luis H Hernandez-Carrasco, Monica D Hernandez-Sanchez, M.X. Rodriguez-Paz
Tecnologico de Monterrey, Mexico

Digital teaching system StudyWays© as a new educational concept

Alexander Chirtsov[1], Olga Alekseeva[1], Timofey Chirtsov[2], Nicolsky Dmitry[3]
1: Saint Petersburg Electrotechnical University ETU "LETI", Russian Federation; 2: The Herzen State Pedagogical University of Russia, Russian Federation; 3: University of Alaska, USA

The implementation of the flipped classroom model in the teaching of educational robotics: A study in secondary school students

Dimitrios A. Varsos, Georgios Dimitriou, Nikolaos Zygouris
University of Thessaly, Greece

Virtual reality as a flexible resource to improve engineering education

José Manuel Nieto Jalil, Aaron Castro Bazua, Luis Carlos Félix Herrán, Francisco Isaías Gutiérrez Castillo, Dionisio Othón Katase, Óscar Alberto González Valenzuela

MF Edu 5.0: Mapping the future education through the 5th wave/tomorrow age theory or theory of comprehensive everything - Special Session

Virtual location: **El Jem Room + Webex 2**
Scientific Chair: **Dr. Hamid Doost Mohammadian**, University of Applied Sciences (FHM)

Cyber Government for Sustainable Governance: Examining Solutions to Tomorrow's Crises and Implications through the 5th wave theory, Edu 5.0 concept and 9PSG model

Prof. Dr. Hamid Doost Mohammadian[1], Zeinab Ghassabzadeh Langari[2], Volker Wittberg[3]
1: University of Applied Sciences (FHM), Germany; 2: University of Sistan and Baluchestan, Iran; 3: University of Applied Sciences (FHM), Germany

Mapping the future sustainable, through the 5th wave/tomorrow age theory or theory of comprehensive everything with a focus on educational SMEs

Prof. Dr. Hamid Doost Mohammadian
University of Applied Sciences (FHM), Germany

Phenomenon-based Learning for Age 5.0 Mindsets: Industry, Society, and Education

Riadh Habash
University of Ottawa, Canada

Smart Governance for Educational Sustainability: Hybrid SMEs & the 5th wave theory Towards Mapping the Future Education in Post-Covid Era

Prof. Dr. Hamid Doost Mohammadian[1], Zeinab

Approach at Human - Computer Interaction Course

Bojan Ilijoski, **Nevena Ackovska**
Faculty of Computer Science and Engineering, North Macedonia, Republic of

An AI-Assisted Bias Detection Framework for Equity-Driven Education

Wooyoung Chung[1], **Xiyu Zhang[1]**, **Zunaira Ahmad[1]**, **Hossein Sayadi[2]**, **Setareh Rafatirad[1]**
1: UC Davis, United States of America; 2: CSU Long Beach, United States of America

The intervention, intersection and impact of social sciences theories upon computing education

Giusy Cristaldi[1], **Andrew Csizmadia[2]**, **Gretchen Richards[3]**, **Keith Quille[4]**, **Charles Riedesel[5]**, **Francesco Maiorana[6]**
1: Pegaso International, Italy; 2: Newman University Birmingham, UK; 3: Independent researcher, USA; 4: TU Dublin, Ireland; 5: University of Nebraska, USA; 6: University of Urbino, Italy

ITESM, Mexico

Applying Project-based Learning to Improve Computer Network Courses: An Experience Report

Zheng Song, **Nidhi Shah**, **Jinhua Guo**, **Qiang Zhu**
University of Michigan at Dearborn, United States of America

Ghassabzadeh Langari[2], **Manuel Castro[3]**, **Volker Wittberg[4]**
1: University of Applied Sciences (FHM), Germany; 2: University of Sistan and Baluchestan, Iran; 3: National Distance Education University (UNED), Spain; 4: University of Applied Sciences (FHM), Germany

7:30pm - 9:00pm **Welcome Reception**

Date: Wednesday, 30/Mar/2022

8:30am - 10:30am

L16: Traditional Labs and Serious Games

Virtual location: **Sidi Bou Said Room + Webex 1**
Scientific Chair: **Christos Douligeris**, University of Piraeus

In-the-Online-Class Remote Lab in Post COVID-19 Pandemic

Fadi Shahroury, **Luae Al-Tarawneh**, **Abdallah Al-Zoubi**
Princess Sumaya University for Technology, Jordan, Hashemite Kingdom of

Service-learning as a bridge to connect theory and practice: A case study

Eduardo Bastida-Escamilla, **Milton Carlos Elias-Espinosa**, **Froylan Franco-Herrera**
Tecnologico de Monterrey, Mexico

From the classroom to the game: applying available pedagogical guidelines in game-based learning

Pedro Santos, **Tom Van Gerven**
KU Leuven, Belgium

Fostering Knowledge Sharing in Education-as-a-Service Communities: A Learning Management System for Lecturers

Sophie Heim, **Borys Levkovskyi**, **Daniel Testor**, **Holger Wittges**, **Helmut Krcmar**
Technical University of Munich, Germany

PBL strategy for Learning Maintenance Engineering

Alejandro Pereira, **Jorge Marcos**, **Rene Lastra**, **Miguel Diaz-Cacho**
University of Vigo, Spain

Storified Programming MOOCs: A Case Study on Learner Engagement and Perception

Christiane Hagedorn, **Emma-Sophie Betz**, **Christoph Meinel**
Hasso Plattner Institute (HPI), Germany

L17: Student-Centered Learning Environments

Virtual location: **Online Webex 3**
Scientific Chair: **Tina Nantsou**, National and Kapodistrian University of Athens

Predicting Students Performance Using Eye-Gaze Features in an Embodied Learning Environment

Neila Chettaoui[1], **Ayman Atia[2,3]**, **Med Salim Bouhlel[4]**
1: SETIT, National School of Engineers of Sfax, Tunisia; 2: HCI-LAB, Faculty of Computers and Artificial Intelligence, Helwan University; 3: Faculty of Computer Science, October University for Modern Sciences and Arts (MSA); 4: SETIT, Higher Institute of Biotechnology, University of Sfax

Connecting Design and Engineering Physics with Reverse Engineering

Khim Tiam Lur, **Da Yang Tan**, **Chin Wei Cheah**, **Chee Huei Lee**
Singapore University of Technology and Design, Singapore

Easy or Difficult! MOOC difficulty and retention

Vivek Sabanwar, **Avijit Pandey**, **Rathin Biswas**, **Kavi Arya**
Indian Institute of Technology Bombay, India

Redesigning international student mobility for global competence development

Björn Kjellgren, **Tanja Richter**
KTH Royal Institute of Technology, Sweden

Coders Assembly - Peer Assisted Learning Model for Freshman Programming Courses

Kyong Jin Shim, **Swapna Gottipati**, **Venky Shankararaman**
Singapore Management University, Singapore

Aligning Engineering Education with Industrial Needs through specialized courses

Imed Ben Dhaou
Dal Al Hekma University, Saudi Arabia

L18: Educational concepts in engineering

Virtual location: **Online Webex 4**
Scientific Chair: **Hua Chai**, University of New South Wales

A systematic review of paper-based versus computer-based testing in engineering and computing education

Andrew Valentine[1], **Paul Vrbik[2]**, **Richard Thomas[2]**
1: The University of Melbourne, Australia; 2: The Univeristy of Queensland, Australia

Engineering Training in The Context of Digital Transformation

Svetlana G. Karstina
Karagandy University of the name of academician E.A. Buketov, Kazakhstan

Investigation of Student`s Engagement in Blended PBL-based Engineering Course and its Influence on Performance

Radhika Amashi[1], **Unnati Koppikar[1]**, **Vijayalakshmi M[1]**, **Rohit Kandakatla[1,2]**
1: KLE Technological University, India; 2: KG Reddy College of Engineering & Technology,India

Study on Massive Open Online Courses in Universities

Finn Reiche, **Claudia Doering**
Hochschule für angewandte Wissenschaften Landshut, Germany

Identify the necessary skills for designing the training tracks for the next-gen of lighting engineers

Georges Zissis[1], **Laurent Canale[1,2]**, **Marta Krakowiak[3]**, **Stylianos Zerefos[4]**, **Evangelos-Nikolaos Madias[5]**, **Marie-Pierre Alexandre[6]**
1: Univ. Toulouse 3, France; 2: Centre National de Recherche Scientifique (CNRS), France; 3: ELCA European Lighting Cluster Alliance, Italy; 4: Hellenic Open University, Greece; 5: National Technical University of Athens, Greece; 6: Association Française de l'Eclairage, France

The Universal IT Support Design for Engineering Education

Stefan Svetsky[1], **Oliver Moravcik[2]**, **Dariusz Mikulowski[1]**
1: Slovak University of Technology in Bratislava, Slovak Republic; 2: 3 Faculty of Sciences, Siedlce University of Natural Sciences and Humanities, Siedlce, Poland

L19: STEM Education Initiatives

Virtual location: **Online Webex 5**
Scientific Chair: **João Almeida**, University of Aveiro

A Computational Thinking Course for Pre-Service Teachers

Eduardo C. Oliveira[1], **Ronaldo C. M. Correia[2,3]**, **Rodolfo Azevedo[2,4]**, **Simone Telles[2]**, **Alessandra A. Macedo[2,5]**, **Roberto A. Bittencourt[1]**
1: UEFS - State University of Feira de Santana, Brazil; 2: UNIVESP - Virtual University of the State of São Paulo, Brazil; 3: UNESP - São Paulo State University, Brazil; 4: UNICAMP - University of Campinas, Brazil; 5: USP - University of São Paulo, Brazil

Cultivating mathematical thinking with SCRATCH, or approaching programming via geometry?

Aikaterini Goltsiou[1], **Chrysa Sofianopoulou[2]**
1: PhD candidate Harokopio University of Athens, Greece; 2: Harokopio University of Athens, Greece

CryptoScratch: Developing and evaluating a block-based programming tool for teaching K-12 cryptography education using Scratch

Nathan Percival[1,2], **Pranathi Rayavaram[1]**, **Sashank Narain[1]**, **Claire Seungeun Lee[1]**
1: University of Massachusetts Lowell, USA; 2: Middlesex Community College, USA

How can we evaluate? A Systematic Mapping of Maker Activities and their Intersections with the Formal Education System

Dirceu Antonio Maraschin Jr[1], **Karlise Nascimento[1,2]**, **Cris Elena Padilha da Silva[1]**, **Lucas Mendes Tortelli[1]**, **Tiago Thompsen Primo[1]**, **Tatiana Tavares[1]**
1: Universidade Federal de Pelotas, Brazil; 2: Instituto Federal Farroupilha, Brazil

Efforts and Suggestions for Improving Cybersecurity Education

Saed Alrabaee[1], **Mousa Al-kfairy[2]**, **Ezedin Barka[1]**

PFDTEILP: Preparing the Future Digital Transformation Experts: Interdisciplinary Learning Pedagogies - Special Session

Virtual location: **Online Webex 6**
Scientific Chair: **Despo Ktoridou**, University of Nicosia
Scientific Chair: **Epaminondas Epaminonda**, University of Nicosia
Chair: **Leonidas Efthymiou**, University of Nicosia

Design Thinking: a didactic-methodological proposal for the training of computer science lecturers

Sonia Morejon Labrada[1], Johann M. Marquez-Barja[2]
1: University of Oriente, Cuba; 2: University of Antwerp & imec, Belgium

Developing Digital Transformation Management Graduate Education

Despo Ktoridou, Elli Doukanari, Epaminondas Epaminonda, Leonidas Efthymiou
University of Nicosia, Cyprus

Linking Digital Transformation to Learning Strategies and Pedagogy

Epaminondas Epaminonda, Leonidas Efthymiou, Elli Doukanari
University of Nicosia, Cyprus

State-of-the-art on writing a literature review: An overview of types and components

Alena Renner, Jenny Müller, Andreas Theissler
Aalen University of Applied Sciences, Aalen, Germany

Smart Cities data analysis with Power BI and R

María Belén Mora Arciniegas, Gladys Alicia Tenesaca Luna
Universidad Técnica Particular de Loja, Ecuador

The four business models for AI adoption in education: Giving leaders a destination for the digital transformation journey

Alex Zarifis, Leonidas Efthymiou
University of Nicosia, Cyprus

The relationship of strategy and technology in education: Bidirectional pedagogical considerations

Leonidas Efthymiou, Epaminondas Epaminonda, Despo Ktoridou, Maria Michailidis
University of Nicosia, Cyprus

TOE: Technologies for Orchestrating Education - Special Session

Virtual location: **El Jem Room + Webex 2**
Scientific Chair: **Carlos Delgado Kloos**, Universidad Carlos III de Madrid

Programming Teaching Interaction

Carlos Delgado Kloos, Carmen Fernández-Panadero, Carlos Alario-Hoyos, Pedro Manuel Moreno-Marcos, María Blanca Ibáñez, Pedro J. Muñoz-Merino, Boni García, Iria Estévez-Ayres
Universidad Carlos III de Madrid, Spain

Using e-Learning Standards to Improve Serious Game Deployment and Evaluation

Ivan Perez Colado, Victor Perez Colado, Ivan Martinez Ortiz, Manuel Freire, Baltasar Fernandez Manjon
Universidad Complutense de Madrid, Spain

Replication of an Evaluation of Teacher Training in the Classification of Programming Exercises Using Bloom's Taxonomy

Susana Masapanta-Carrión[1], J. Ángel Velázquez-Iturbide[2]
1: Pontificia Universidad Católica del Ecuador, Ecuador; 2: Universidad Rey Juan Carlos, Spain

Orchestrating special education during the COVID-19 lockdown. A mapping study of the technologies and challenges

Yussy Chinchay, Javier Gómez, Germán Montoro
Universidad Autónoma de Madrid, Spain

Engineering IoT systems in the convergence between agronomic and computer sciences

Bernardo Tabuenca[1], Vicente Garcia-Alcantara[1], Carlos Gilarranz-Casado[2], Alejandro Leo-Ramirez[1], Juan Arquero-Gallego[1], Edmundo Tovar[3]
1: Dept. Sistemas Informaticos, UPM, Spain; 2: Dept. Ingenieria Agroforestal, UPM, Spain; 3: Dept. Lenguajes y Sistemas Informaticos e Ingenieria de Software, UPM, Spain

Raspberry Pi Applications in Electronics and Control Laboratories

Nelson Vaca, Felix Garcia-Loro, Sergio Martin Gutierrez, Manuel Castro, Elio Sancristobal, Miguel Rodriguez-Artacho
UNED - Spanish University for Distance Education, Spain

1: United Arab Emirates University, United Arab Emirates; 2: Zayed University

Participatory Approach to Engineering Service Learning Programs - Quality Framework for the Implementation of Unnat Bharat Abhiyan Program in Indian Engineering Institution

Rohit Kandakatla[1], Dhinesh Radhakrishnan[2], David Delaine[3]
1: KG Reddy College of Engineering and Technology, India; 2: Purdue University, USA; 3: The Ohio State University, USA

8:30am - 12:30pm **Conference Online Support Slot 1**

10:30am - 11:00am **Coffee Break**

11:00am - 11:30am **Keynote 2: Current EdTech Challenges and Applications in New Normal of Inclusive Education**
Virtual location: **Sidi Bou Said Room + Webex 1**
Scientific Chair: **Hatem Ben Sta**, University of Tunis at El Manar

by **Chee Ken Nee**, Universiti Pendidikan Sultan Idris, Malaysia

11:30am - 12:00pm

Keynote 3: Mapping the future towards educational sustainability through the 5th wave theory, Edu 5.0 concept and 9PSG model
Virtual location: **Sidi Bou Said Room + Webex 1**
Scientific Chair: **Hatem Ben Sta**, University of Tunis at El Manar
by **Hamid Doost Mohammadian**, University of Applied Sciences (FHM) in Germany

12:00pm - 1:00pm

S1: Infrastructure and Technologies fro Engineering Education

Virtual location: **Sidi Bou Said Room + Webex 1**
Scientific Chair: **Reinhard Langmann**, Hochschule Düsseldorf University of Applied Sciences
Scientific Chair: **Darina Dicheva**, Winston Salem State University

A Review of Student-Centered Evaluation: Functions and Perceptions

Mahmoud Ahmad, Lillian Among
UAE University, United Arab Emirates

Idea Lab: Bridging Product Design and Manufacturing in Engineering Education 4.0

Paul Steffen Kleppe, Øystein Bjelland, Irina Emily Hansen, Ola Jon Mork
NTNU, Norwegian University of Science and Technology, Norway

Reform of active pedagogy in the age of Covid

Faten Ziadi, Naouel Boughattas, Wissal Neji
ESPRIT School of Engineering, Tunisia

Trustworthy Autonomous Systems (TAS): Engaging TAS experts in curriculum design

Mohammad Naiseh[1], Caitlin Bentley[2], Gopal Ramchurn[1]
1: University of Southampton, United Kingdom; 2: University of Sheffield, United Kingdom

S2: Innovation, Methods, Teaching and Learning Experiences in Engineering Education

Virtual location: **El Jem Room + Webex 2**
Scientific Chair: **João Almeida**, University of Aveiro

An Experience Report on Transitioning to Blended Learning and Portfolio-assessment: a Cross-campus Course in Programming

Majid Rouhani, Atle Olsø, Arne Styve, Kiran Raja
Norwegian University of Science and Technology, Norway

Bringing the Industry Expertise to the Classroom for Enhancing Life-Long Learning

Jinane Mounsef, Muhieddin Amer
Rochester Institute of Technology - Dubai, United Arab Emirates

Teaching and Facilitating an Online Learning Environment for a Web Programming Module

Usman Naeem[1], Lisa Bosman[2], Sukhpal Singh Gill[1]
1: Queen Mary University of London, United Kingdom; 2: Purdue University, USA

Self-reliant peer teaching as an additional dimension of university-level education for high potentials

Iris Groß, Michael Malschützky, Tobias Held, Jan Behrendt, Daniel Röthgen, Martina Grein, Dirk Reith
H BRS Bonn Rhein Sieg University of Applied Science, Germany

S3: Gamification and Lab concepts in Engineering Education

Virtual location: **Online Webex 3**
Scientific Chair: **Lobna Hsairi**, CCSE

An Analysis of Gamified Mobile Applications to Educate Children about Astronomy

Eslam Ahmed, Rim Fares, Ali Ibrahim, Sofia Ouhbi
United Arab Emirates University, United Arab Emirates

Collaborative tools web 3.0 in the teaching of mathematics in times of covid-19 pandemic

Daniel Morocho-Lara, Patricio Miranda-Ramos, Héctor Neto-Chusín, Sarah Iza-Pazmiño
Universidad Técnica de Ambato, Ecuador

Children's learning based on the colors in the fruit's perception in the techno-emotional cooking: Case study of emotions delimitation

Cristina Páez-Quinde
Universidad Técnica de Ambato, Ecuador

EASLE EDUCATIONAL PLATFORM AS A TOOL TO DEVELOP READING SKILLS

Ruth Elizabeth Infante-Paredes, Santiago David Velastegui Viteri, Maria Cristina Paez Quide
Universidad Técnica de Ambato, Ecuador

S4: Diversity and Inclusion in Engineering Education

Virtual location: **Online Webex 4**
Scientific Chair: **Olga Oreshkina**, Bauman Moscow State Technical University
Scientific Chair: **Isabel Maria João**, ISEL - Instituto Superior de Engenharia de Lisboa, IPL, Portugal

A framework for self-organized learning environments to develop soft skills in geographically distributed and multicultural engineering teams

Eduardo Juárez[2], Noreha Abdul Malik[1], Ivo Ayala[2], Anis Nurashikin Nordin[1], Nadirah Abdul Rahim[1]
1: International Islamic University Malaysia, Malaysia; 2: Tecnologico de Monterrey, Mexico

An Insight into Cultural Competence and Ethics in K-12 Artificial Intelligence Education

Ismaila Temitayo Sanusi[1], Sunday Adewale Olaleye[2]
1: University of Eastern Finland, Finland; 2: Jamk University of Applied Sciences, Jyväskylä, Finland

Unintended Consequences when the Engineering Design Team is Noninclusive: An Exploration of the Literature

Eva Murphy[1,2], Lizbeth Goodman[2]
1: IT Sligo, Ireland; 2: University College Dublin, Ireland

Framework for inclusive design: an interdisciplinary, experiential learning approach in engineering education

Garay-Rondero Claudia Lizette[1], Caratozzolo Patricia[1], Membrillo-Hernandez Jorge[1], Busciantella-Ricci Danielle[2]
1: Institute for the Future of Education, School of Engineering and Sciences, Tecnologico de Monterrey, Mexico; 2: Design Research Lab, Department of Humanities, University of Trento, Italy

S5: Student-Centered Learning Environments

Virtual location: **Online Webex 5**
Scientific Chair: **Jorge Manuel Mendonça**, Polythechnic of Porto - School of Engineering

Active Learning on the collaborative digital twin of the process plants

Fabienne-Fariba Salimi[1], Frederic Salimi[1], Hosein Taghipoor[1], Reyhane Mokhtarname[2], Ali Akbar Safavi[2], Leonhard Urbas[3]
1: ADEPP Academy, France; 2: Advanced Control Laboratory, Power & Control Engineering Department, Shiraz University; 3: Technische Universität Dresden, Dresden, Germany

Covid-19 and Online Learning Challenges in Engineering Education: A Case Study of the American University of Sharjah

Vian Ahmed, Hisham Ahmed, Hessa Zamzam, Sara Saboor
American University of Sharjah, United Arab Emirates

Is CoI framework a sign of deep and meaning learning outcomes?

S6: Future-oriented and personalized educational concepts

Virtual location: **Online Webex 6**
Scientific Chair: **Siva Chandrasekaran**, Swinburne University of Technology

How to survive a PhD – using Design Thinking methods and the Business Model Canvas

Martin Wolfgang Hoffmann[1], Rainer Drath[2]
1: ABB AG, Corporate Research, Germany; 2: Pforzheim University of Applied Sciences, Faculty of Technology, Germany

Self-Directed Learning using Eye-Tracking: A Comparison Between Wearable Head-Worn and Webcam-based Technologies

Sara Khosravi, Ahsan Raza Khan, Ahmed Zoha, Rami Ghannam
University of Glasgow, United Kingdom

Using Machine Learning Methods to Understand Students' Performance in an Engineering Course

Wei Lek Kwan, Gim-Yang Maggie Pee, Li Ling Apple Koh, Mei Xuan Tan

Carla MA Pinto[1], Lurdes Babo[2], Jorge Mendonça[1]
1: School of Engineering, Polytechnic of Porto, Portugal; 2: School of Accounting and Administration, Polytechnic of Porto, Portugal

Towards flexible delivery in engineering education: students' perception on block-teaching delivery
Mose Bevilacqua, Marzia Milan, Mariana Lilley
University of Hertfordshire, United Kingdom

Singapore University of Technology and Design, Singapore

Teacher-guided Autonomous Learning Enabled by Artificial Intelligence Empowered Remote Experiment Platform
Rentao Gu, Ziyi Xi, Boyang Lin, Yuefeng Ji
Beijing University of Posts and Telecommunications, China, People's Republic of

1:00pm - 2:00pm **Lunch Break**

2:00pm - 3:00pm

Panel 1: Role of non-traditional laboratories in the education horizon
Virtual location: **Sidi Bou Said Room + Webex 1**
Scientific Chair: **Felix Garcia Loro**, UNED

Moderator:

- Lilia Cheniti, University of Sousse, Tunisia

Panelists

- Denis Gillet: School of Engineering, Swiss Federal Institute of Technology in Lausanne, Switzerland
- Abdelhalim Benachenhou: Université Abdelhamid Ibn Badis de Mostaganem, Algeria
- Luis Rodriguez Gil: Labsland, Co-Funder & CTO, Bilbao, País Vasco, España
- Felix Garcia: Spanish University for Distance Education (UNED), Madrid, Spain

Panel 2: From Coding to Algorithms: learning path for computing and civic education competencies development
Virtual location: **Online Webex 3**
Scientific Chair: **Francesco Maiorana**, University of Urbino

Moderator:

- **Francesco Maiorana**, University of Urbino, Department of Pure and Applied Science, Italy

Panelists

- **Keith Quille**, Technological University Dublin, Department of Computing Tallaght Campus, Ireland
- **Andrew Csizmadia**, Computer Science Department, Newman University Birmingham, England
- **Gretchen Richards**, Freelance Researcher, Anniston, Alabama, USA
- **Giusy Cristaldi**, Pegaso International, Italy

2:00pm - 6:00pm **Conference Online Support Slot 2**

3:00pm - 4:40pm

IDEE: Inclusion and Diversity in Engineering Education - Special Session

Virtual location: **Online Webex 6**
Scientific Chair: **Pedro Plaza Merino**, PLAZA ROBOTICA
Scientific Chair: **Aruquia Peixoto**, CEFET/RJ

Gender analysis on the Ph.D. theses defended in Spain in the field of Optics and Photonics

Rosa Ana Perez-Herrera[1], Maria-Baralida Tomas[2], Beatriz Santamaria[3], Alba de las Heras[4], Clara Benedi-Garcia[5], Ana Isabel Gomez-Varela[6], Martina Delgado-Pinar[7], Veronica Gonzalez Fernandez[8]
1: Universidad Publica de Navarra; 2: Universitat d'Alacant; 3: Universidad Politecnica de Madrid; 4: Universidad de Salamanca; 5: Instituto de Optica, Consejo Superior de Investigaciones Cientificas; 6: Universidade de Santiago Compostela; 7: Universitat de Valencia; 8: Universidad Complutense de Madrid

Rethinking Women in Engineering Marginalisation: Beyond Interest Ignition

Salma Alarefi
University of Leeds, United Kingdom

Academic Support for Deaf and Hard of Hearing Students in Inclusive Engineering Education Programs: Key Decisions

Olga Alexeevna Oreshkina, Yulia Anatolievna Safonova
Bauman Moscow State Technical University, Russian Federation

Using transdisciplinary problem-oriented teaching approaches to inspire students for the diversity of engineering sciences

Markus Dumschat[1], Phileas Schweizer[1], Ralf Stetter[1], Joachim Rottmann[2], Benedikt Reick[1]
1: University of Applied Sciences Ravensburg-Weingarten, Germany; 2: University of Education Weingarten, Germany

L20: Data driven engineering education

Virtual location: **Sidi Bou Said Room + Webex 1**
Scientific Chair: **Sarantos Psycharis**, ASPETE
Scientific Chair: **Axel Böttcher**, HM Hochschule München University of Applied Sciences

Extracting Learning Performance Indicators from Digital Learning Environments

Prem Sundaramoorthy[1], Cornelis Vertegaal[1], Cecilia Martinez[2], Mark Bentum[1], Ramiro Serra[1], Anton Montagne[3], Chris Verhoeven[3]
1: Eindhoven University of Technology, The Netherlands; 2: National University of Cordoba, Argentina; 3: Delft University of Technology, The Netherlands

Efficient Structural Analysis of Source Code for Large Scale Applications in Education

Adrian Andreas Kögl[1,2], Peter Hubwieser[2], Mike Talbot[2], Johannes Krugel[2,3], Michael Striewe[4], Michael Goedicke[4]
1: Columbia University, United States of America; 2: Technical University of Munich, Germany; 3: Leibniz University Hannover, Germany; 4: University of Duisburg-Essen, Germany

A computational tool for engineer dropout prediction

Paola Mussida, Pierluca Lanzi
Politecnico di Milano, Italy

Education Path: Student orientation based on the job market needs

Ibrahim Rahhal[1,2], Kathleen Carley[3], Ismail Kassou[2], Nada Sbihi[1]
1: International University of Rabat, Morocco; 2: Mohamed V University, Rabat, Morocco; 3: Carnegie Mellon University, Pittsburgh, USA

ASSESEMENT AND INTEGRATED STEAM IN ENGINEERING EDUCATION

Sarantos Psycharis[1], Konstantinos Kalovrektis[2]
1: ASPETE, Greece; 2: University of Thessaly

L21: Digitalization and Artificial Intelligence

Virtual location: **Online Webex 3**
Scientific Chair: **Lobna Hsairi**, CCSE

Digital Transformation(DX) for Skill Learners - The Design Methodology and Implementation of Educational Chatbot using Knowledge Connection and Emotional Expression

Chaofeng Zhang[1], Gaolei Li[2], Hiroshi Hashimoto[1], Zejun Zhang[3]
1: Advanced Institute of Industrial Technology, Japan.; 2: Shanghai Jiao Tong University; 3: Zhejiang University

EduML: An explorative approach for students and lecturers in machine learning courses

Andreas Theissler, Philip Ritzer
Aalen University of Applied Sciences, Aalen, Germany

Enhancing Automatic Attendance System Using Face Recognition

Alex Bhattarai, Sampada Dhakal, Arun Kumar Timalsina
Tribhuvan University, Nepal

Interdisciplinary CS1 for Non-Majors: The Case of Graduate Psychology Students

Koby Mike, Orit Hazzan
Technion Institute of Technology

Roadmap for development of skills in Artificial Intelligence by means of a Reinforcement Learning model using a DeepRacer autonomous vehicle

Jamir Leal Cota, Brandon García Alonso, José A. Tavares Rodríguez, Carlos Vazquez Hurtado
Tecnológico de Monterrey, Mexico

L22: Innovation in Engineering Education

Virtual location: **Online Webex 4**
Scientific Chair: **Jorge Manuel Mendonça**, Polythechnic of Porto - School of Engineering

Design of Research Canvas to align Research Efforts at Engineering Education Research Centre in India

Vijayalakshmi M[1], Rohit Kandakatla[1], Preethi Baligar[1], Gopalkrishna Joshi[2], Ashok Shettar[1]
1: KLE Technological Univerisity, India; 2: Karnataka State Higher Education Council, Bangalore, India

EXECUTE: Exploring Eye Tracking Data to Support E-Learning

Ahsan Raza Khan, Sara Khosravi, Sajjad Hussain, Ghannam Rami, Ahmed Zoha, Muhammad Ali Imran
University of Glasgow, United Kingdom

Half-full or half-empty? The impact of influential events pre- and intra-COVID-19 pandemic on enrolment, progression and completion of online courses

Emilio Cabezas-Zevallos, Luis Acosta-Soto, Jorge Rodriguez-Tort, Samira Hosseini
Tecnologico de Monterrey, Mexico

Exploring the factors influencing students' experience with challenge-based learning: a case study

Karolina Doulougeri, Gunter Bombaerts, Diana Martin, Adam Watkins, Jan D. Vermunt, Michael Bots
Eindhoven University of Technology, the Netherlands

The role of higher education towards sustainable consumption behavioural change: topics discussed in sustainable consumption education

Isabel Maria João[1,2], João Miguel Silva[1,3]
1: ISEL - Instituto Superior de Engenharia de Lisboa, Instituto Politécnico de Lisboa, Portugal; 2: CEG-IST, Instituto Superior Técnico, Universidade de Lisboa, Portugal; 3: CQE, Instituto Superior Técnico, Universidade de Lisboa, Portugal

L23: Student-Centered Learning Environments

Virtual location: **Online Webex 5**
Scientific Chair: **Ana Pavani**, Pontifícia Universidade Católica do Rio de Janeiro (PUC-Rio)

Classification of Students' Misconceptions in Individualised Learning Environments (C-SMILE): An Innovative Assessment Tool for Engineering Education Settings

N. P. Subheesh[1], Sobin C. C.[2], Jafar Ali[3], Meka Varsha[4]
1: IIT Madras; 2: SRM University AP, India; 3: IIIT Hyderabad; 4: SRM University AP, India

An immersive learning model by linking with companies as educational partners to improve the performance of industrial engineering students

Luis Aarón Ramírez-Robles, Eréndira Gabriela Avilés-Rabanales, Ana Mónica Turcios-Esquivel, Yerly Flores-García, Kenneth Edgar Hernández-Ruiz

P4HE: The Evolution of Pedagogic Practices in a Post-Pandemic Higher Education Landscape - Special Session

Virtual location: **El Jem Room + Webex 2**
Scientific Chair: **Usman Naeem**, Queen Mary University of London

A Proposed Machine Learning Based Approach to Support Students with Learning Difficulties in The Post-Pandemic Norm

Saeed Sharif[1], Wael Elmedany[2]
1: UEL, United Kingdom; 2: University of Bahrain

CODI – A Web Application to Facilitate Live, Remote Programming Labs

Jordan Rebecca Wathen[1,2], Aaron Kans[2], Gaurav Malik[2]
1: Accenture, United Kingdom; 2: University of East London

FRIYAY – A Contemporary Model of Education for Engineering and

SC: Steering Committee meeting (Only by invitation)

Virtual location: **Alyssa Room - Hybrid**
Scientific Chair: **Manuel Castro**, UNED

Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico

EDU Movies: using fiction movies for student centered learning

Maria de la O Laura del Carmen Cuevas-Cancino Esteva, Maritza Peña-Becerril, Claudia Camacho-Zuñiga, Eréndira Gabriela Avilés-Rabanales
Tecnológico de Monterrey, Mexico

Scenarios for student-centred learning: RFiD Pocket Lab and IoT Platform as teaching tools

Raul Crespo, Edgar Omar Lopez-Caudana, Katya Romo, Alfredo Mantilla
Tecnologico de Monterrey, Mexico

Improving Student Outcomes Attainment by Project Based Learning in Electrical Machines

Angel Sapena-Baño, Jordi Burriel-Valencia, Martin Riera-Guasp, Carla Terron-Santiago, Javier Martinez-Roman
Universitat Politècnica de València, Spain

Management Institutions

Arjun Singar, Shashi Jain, Akhilesh K B
Indian Institute of Science, India

Watch and Learn Using Code Snippets

Loubna Mekouar
Mohammed VI Polytechnic University, Morocco

Resilient Learning as a Tool for Excellence: Laurea's Students in the ECHO H2020 Project during the COVID-19 Pandemic

Jyri Rajamäki, Rauno Pirinen
Laurea University of Applied Sciences, Finland

4:40pm - 5:00pm **Coffee Break**

5:00pm - 7:00pm

Glocal-LA: Human-Centred Learning Analytics for improved learning across the Globe - Special Session

Virtual location: **Sidi Bou Said Room + Webex 1**
Scientific Chair: **Alejandra Martínez-Monés**, Universidad de Valladolid
Scientific Chair: **Olga Viberg**, KTH Royal Institute of Technology

Keynote: "**Actionable insight, blessing or curse?**" by Dai Griffiths, Researcher at iTED - UNIR, United Kingdom

Analytics for Supporting Teaching Success in Higher Education: A Systematic Review

Dirk Ifenthaler[1,2], Jane Yau[1,3]
1: University of Mannheim, Germany; 2: Curtin University, Australia; 3: DIPF Leibniz Institute for Research and Information in Education

LMS Logs and Student Performance: The Influence of Retaking a Course

Martin Liz-Dominguez, Martin Llamas-Nistal, Manuel Caeiro-Rodriguez, Fernando Mikic-Fonte
AtlanTTic Research Center, University of Vigo, Spain

Swedish Students' Expectations on Learning Analytics in Higher Education

Linda Engström, Olga Viberg, Olle Bälter, Stefan Hrastinski
KTH Royal Institute of Technology, Sweden

Supporting instructors in the design of actionable feedback for MOOCs

Paraskevi Topali[1], Alejandro Ortega-Arranz[1], Irene-Angelica Chounta[2], Juan I. Asensio-Pérez[1], Alejandra Martínez-Monés[1], Sara L. Villagrá-Sobrino[1]
1: Universidad de Valladolid, GSIC-EMIC Research Group; 2: University of Duisburg-Essen, Colaps Research Group

L24: Student-Centered Learning Environments

Virtual location: **Online Webex 4**
Scientific Chair: **Tina Nantsou**, National and Kapodistrian University of Athens
Scientific Chair: **Olga Oreshkina**, Bauman Moscow State Technical University

A Challenge Based Model for the Development of Digital Transformation and Disciplinary Competences in Structural Engineering Courses

Miguel X. Rodriguez-Paz, Saul E. Crespo-Sanchez, Luis H. Hernandez-Carrasco, Monica D. Hernandez-Sanchez, Benjamin Sanchez
Tecnologico de Monterrey, Mexico

Are negative emotions useful for learning?

Iván Celis Maldonado, Lilia Carolina Rodriguez-Galvan, Eduardo Daniel Juarez
Tecnologico de Monterrey

Fostering Creativity in Seniors and Freshman Students of Engineering

Oscar Ivan Higuera-Martinez, Liliana Fernandez-Samaca, Andrea Catalina Alvarado-Fajardo, Luis Ariel Mesa-Mesa
Universidad Pedagógica y Tecnológica de Colombia, Colombia

Online teaching and learning due to Covid-19: Case study on the impact on engineering students

Samuel Loyiso Gqibani
University of Johannesburg, South Africa

Students' Expectations Towards Multi-Campus Courses

Abdullah Bahmani[1], Rune Hjelsvold[2]
1: the Norwegian University of Science and Technology (NTNU) / the Excited center; 2: the Norwegian University of Science and Technology (NTNU) / the Excited center

L25: Engineering Education Methods

Virtual location: **Online Webex 5**
Scientific Chair: **Bernhard Standl**, Karlsruhe University of Eduvation

IT skills and language challenges hindering student-centred learning: A case of a rural Eastern Cape University in South Africa

Courage Matobobo, David Tatenda Risinamhodzi
Walter Sisulu University, South Africa

Training of engineers: approaches to customization of educational programs

Gennady Veselov, Anton Pljonkin, Anna Opryshko, Tatiana Klimina
Southern Federal University, Russian Federation

Adapting a Very Small Size Soccer (VSSS) competition for learning robotics in virtual teaching

Carlos Vázquez-Hurtado, Consuelo Rodriguez-Padilla
Tecnologico de Monterrey, Mexico

Responsibility and Challenge Based Learning (CBL)

Lukas Fuchs, Gunter Bombaerts
Eindhoven University of Technology, Netherlands, The

A Guide Towards a Definition of Computational thinking in K-12

Redar Ismail, Theresa Steinbach, Craig Miller
DEPAUL UNIVERSITY, United States of America

L26: Gamification for Engineering Education

Virtual location: **Online Webex 6**
Scientific Chair: **Adam Funnell**, University of Sheffield

Virtual Museum Tours for Schools: Teachers' Experiences and Expectations

Maria Aristeidou[1], Theodora Kouvara[2], Christoforos Karachristos[2], Natalia Spyropoulou[2], Ana Benavides-Lahnstein[1], Bojana Vulicevic[3], Alexis Lacapelle[5], Theofanis Orphanoudakis[2], Zoe Batsi[4]
1: The Open University, United Kingdom; 2: Hellenic Open University, Greece; 3: Logopsycom, Belgium; 4: IDEC, Greece; 5: Interactive 4D, France

A PROPOSAL FOR MICROMANAGEMENT OF PEOPLE THROUGH RPG CARDS IN EDUCATION FOR INNOVATION.

Emmanuel Barreto de Carvalho[1], Guilherme Ranoya[2], Geber Ramalho[1], Ayrton Eusébio[2], Cristiano Araújo[1]
1: CIN/UFPE, Brasil; 2: UFPE, Brasil

A hydraulic 3D-lab based on virtual Gora dam visits at Call of Duty Warzone to Develop Student's Competencies During the COVID-19 Pandemic

Romeo Ballinas-Gonzalez, Rashid Abella, Julio Barrios, Raul Garibay, Juan Garrido
Instituto Tecnologico y de Estudios Superiores de Monterrey, Mexico

Evaluating Usability and Educational Effectiveness of a Serious Game for Programmers Using Alternative Interfaces and Types of Activities

Kallirroi Zarkadoula, Michalis Xenos
University of Patras, Greece

Integrating Industry 4.0 in engineering education during a global pandemic: Approach and Learning Efficacy

Sourav Jena, Gayatri Ajit Ranade, Ruchi Pushpak Sharma, Kavi Arya
Indian Institute of Technology

S7: Innovation, Serious Games, and Remote Labs

Virtual location: **EI Jem Room + Webex 2**
Scientific Chair: **LESLIE PRICE MARTINICH**, Competitive Focus
Scientific Chair: **Darina Dicheva**, Winston Salem State University

Designing and Using Capture The Flag for Coordination and Interaction in Engineering Education

Kelei Zhang, Simeon Wuthier, Kay Yoon, Sang-Yoon Chang
University of Colorado, Colorado Springs

Take Home Lab as a chance for practical experience and problem based learning in a remote working situation

Iris Groß, Ingo Groß
H BRS Bonn Rhein Sieg University of Applied Science, Germany

Serious games in management to support the active construction of knowledge in engineering studies

Amira Kamel Inoubli, Dhouha Melliti Ben Khedher
Ecole Supérieure d'ingénierie et des technologies (ESPRIT), Tunisia

COACH_ING EDUCATIONAL MODEL: - analysis and application for business

Roberta Tempone[1], Mihai Ursache[1], Viviana Callea[1], Germana Remigi[1], Lia Matrisciano[2]
1: FLY FISH SRL, Italy; 2: Facoltà di Ingegneria Civile e Industriale Sapienza di Roma

Work-in-Progress: What Else Matters When Gamifying a Learning Activity

Christo Dichev, Darina Dicheva
Winston Salem State University, United States of America

Education and Training for Automation 4.0 in Thailand - ETAT

Christian Madritsch[1], Reinhard Langmann[2]
1: Carinthia University of Applied Sciences, Austria; 2: Duesseldorf University of Applied Sciences

S8: Mastering Digitalization and Artificial Intelligence

Virtual location: **Online Webex 3**
Scientific Chair: **Imed Ben Dhaou**, Dal Al Hekma University
Scientific Chair: **Saed Alrabaee**, United Arab Emirates University

Artificial intelligence in African schools: Towards a contextualized approach

Ismaila Temitayo Sanusi[1], Solomon Sunday Oyelere[2], Friday Joseph Agbo[1], Amos Sunday Oyelere[1], Joseph Olamide Omidiora[3], Ademola Eric Adewumi[4], Christopher Aifuwa Ogbebor[5]
1: University of Eastern Finland, Finland; 2: Luleå University of Technology, Sweden; 3: International Institute of Tropical Agriculture, Nigeria; 4: Bauhaus University Weimar, Germany; 5: University of Lagos, Nigeria

Application of Somatosensory Camera in Robot Remote Experimental Teaching

Chenhui Wan, Tao Huang, Xi Zhang, Xin Zhang, Youmin Hu, Di Wang
Huazhong University of Science and Technology, China, People's Republic of

Handwriting treatment and acquisition in dysgraphic children using a humanoid robot-assistant

Soukaina Gouraguine, Mohammed Qbadou, Khalifa Mansouri
ENSET of Mohammedia, Hassan II University Casablanca, Morocco, Morocco

Micro-Grid Educational Laboratory Modernization using IEDs

Abdelsalam Elhaffar[1,2]
1: Sultan Qaboos University, Oman; 2: University of Benghazi, Libya

The flipped classroom in meaningful math learning: case study eighth year of EGB

Daniel Morocho-Lara, Cristina Páez-Quinde, Héctor Neto-Chusín, Wilma Suárez-Mosquera
Universidad Técnica de Ambato, Ecuador

Preparing Future SQA Professionals: An Experience Report of Metamorphic Exploration of an Autonomous Driving System

Yifan Zhang[1], Matthew Pike[1], Dave Towey[1], Jia Cheng Han[2], Zhi Quan Zhou[2]
1: University of Nottingham Ningbo China, People's Republic of China; 2: University of Wollongong, Australia

AutoQuery - A simple natural language to SQL query generator for an e-learning platform

Parth Parikh, Muskan Jain, Aman Harsh, Oishik Chatterjee, Gaurav Shahani, Rathin Biswas, Kavi Arya
e-Yantra, IIT-Bombay

Work-in-Progress: The vector of increasing the attractiveness of modern master degree programmes in engineering education at a regional university

Maria Eltsova, Anna Melnikova, Dmitrii Repetskiy
Perm National Research Polytechnic University, Russian Federation

Bombay, India

7:00pm - 9:30pm **Touristic Tour to Sidi Bou Said and Gala Dinner**

Date: Thursday, 31/Mar/2022

8:30am I-MOBA: Internet-mediated, Open Book | L27: Personalized educational concepts | L28: Student-Centered Learning

-
10:30am

Assessments in Quantitative Disciplines - Special Session

Virtual location: El Jem Room + Webex 2
Scientific Chair: **Abel Nyamapfene**, University College London
Scientific Chair: **Anita Campbell**, University of Cape Town

Assessing higher levels of learning through real-life problems in engineering mathematics

Matheus Oliveira de Andrade[1], Mariana Zurita[2], Iva Burova[1], Abel Nyamapfene[1]
1: Centre for Engineering Education, UCL Engineering, UCL, United Kingdgom; 2: Institute of Cognitive Neuroscience, UCL Neuroscience, UCL, United Kingdom

MATLAB and Python Open Book Assessments: Lessons from Two UK Institutions

Abel Nyamapfene[1], Stephen Lynch[2], Iva Burova[1], Matheus Oliveira De Andrade[1]
1: University College London, United Kingdom; 2: Manchester Metropolitan University, United Kingdom

Now what? Pedagogical implications of a shift to open book assessment of vector calculus

Tracy Craig, Fulya Kula, Tugce Akkaya
University of Twente, Netherlands, The

Online assessment of computer vision and robotics skills based on a digital twin

Samantha Rivera-Calderón, Rafael Pérez-San Lázaro, Carlos Vazquez-Hurtado
Tecnológico de Monterrey, Mexico

Reconfiguring the boundaries between learning and assessment in a Vector Calculus course for engineering students

Pragashni Padayachee
University of Cape Town, South Africa

Work-in-progress: Internet-mediated and open book assessments to improve wellbeing

Anita Campbell
University of Cape Town, South Africa

L29: Teaching and Learning Experiences in Engineering Education

Virtual location: Online Webex 4
Scientific Chair: **Ming-Der May**, Lunghwa University of Science and Technology

Analysis of Graduate Attributes Assessment in Final Year Engineering Design Project- What are the Global Practices?

Samuel Loyiso Gqibani, Cristina Anghel, Rita Steenkamp, Nkeiruka Nwobodo-Anyadiegwu, Amukelani Baloyi
University of Johannesburg, South Africa

Development of a Vignette-based Instrument to Assess Students' Perception of the Teacher's Empathy during Collaborative Algorithmic Problem-solving Tasks

Bernhard Standl, Nadine Schlomske-Bodenstein
Karlsruhe University of Eduvation, Germany

Continuous Examination by Automatic Quiz Assessment Using Spiral Codes and Image Processing

Fernando Alonso-Fernandez, Josef Bigun
Halmstad University, Sweden

Introducing Project Based Learning for Teaching and Learning Electrical Drives: A case of UPV

Angel Sapena-Baño, Jordi Burriel-Valencia, Ruben Puche-Panadero, Manuel Pineda-Sanchez, Javier Martinez-Roman
Universitat Politècnica de València, Spain

A Recommendation Algorithm for University Master Tutors Based on Machine Learning

Guanming Chen[1], Chuantao Yin*[1,2], Yuanxin Ouyang[3], Wenge Rong[3], Zhang Xiong[3], Jinsong Cai[4]

Virtual location: Sidi Bou Said Room + Webex 1
Scientific Chair: **Siva Chandrasekaran**, Swinburne University of Technology

An innovative course delivery model for industry-master programs – presentation of a case-study at the University of South-Eastern Norway

Jose Ferreira
University of South-Eastern Norway, Norway

A Tangible-Tool-Based Lesson Plan on Cipher Key Exchange Protocol for Early-Stage Learners

M Fahim Ferdous Khan, Damar Masato Hadisumarto, Ken Sakamura
Toyo University, Japan

Studying the impact of learning situation on learner model

Asma Ayari[1,2], Mariem Chaabouni[2], Henda Ben ghezala[2]
1: ESPRIT School of Engineering, Tunis. Tunisia; 2: RIADI Laboratory University of Manouba Tunisia

Learning to Program: an In-service Teachers' Perspective

Majid Rouhani, Miriam Lillebo, Veronica Farshchian, Monica Divitini
Norwegian University of Science and Technology, Norway

H2O Learn - Hybrid and Human-Oriented Learning: Trustworthy and Human-Centered Learning Analytics (TaHCLA) for Hybrid Education

Carlos Delgado Kloos[1], Yannis Dimitriadis[2], Davinia Hernández-Leo[3], Carlos Alario-Hoyos[1], Alejandra Martínez-Monés[2], Patricia Santos[3], Pedro J. Muñoz-Merino[1], Juan I. Asensio-Pérez[2], Lluís Vicent Safont[3]
1: Universidad Carlos III de Madrid, Spain; 2: Universidad de Valladolid, Spain; 3: Universitat Pompeu Fabra, Spain

Impact of COVID-19 pandemic to EDUCON: a bibliometric analysis

Mariana M. Silva, Alexandra R. Costa, Gustavo R. Alves, Ana Moura
ISEP, Portugal

L30: Future-oriented concepts in engineering

Virtual location: Online Webex 5
Scientific Chair: **Francesco Maiorana**, University of Urbino
Scientific Chair: **Rea Lavi**, Massachusetts Institute of Technology

Cross-university certification system as proof of competence in project management

Holger Timinger[1], Matthias Vieth[2], Harald Wehnes[3]
1: University of Applied Sciences Landshut, Germany; 2: University of Applied Sciences Darmstadt, Germany; 3: Julius-Maximilians-University Würzburg, Germany

Impact of alternative designs of multimedia elaboration on learning outcomes: Towards personalized learning of Software Engineering.

Samuel Chikasha[1], Wim Van Petegem[1], Martin Valcke[2]
1: KU Leuven, Belgium; 2: University Of Ghent

Computing Competencies: Mapping CC2020 Dispositions to SFIA Responsibility Characteristics

David S Bowers[1], Mihaela Sabin[2], Rajendra K Raj[3], John Impagliazzo[4]
1: The Open University, United Kingdom; 2: University of New Hampshire Manchester, NH, USA; 3: Rochester Institute of Technology, Rochester, NY, USA; 4: Hofstra University, Hempstead, NY, USA

On the link between Education and Industry 4.0: a framework for a data-driven education design

Irene Spada, Filippo Chiarello, Alessandra Curreli, Gualtiero Fantoni
University of Pisa, Italy

Environments

Virtual location: Online Webex 3
Scientific Chair: **Razzaqul Ahshan**, Sultan Qaboos University College of Engineering

Virtual Reality for educating Qatari Sign Language using signing avatar: The future of creative learning for deaf students

Oussama El Ghoul, Achraf Othman
Mada Center, Qatar

Students Perception and Satisfaction on Technology-enhanced Active Student Engagement in Online Teaching and Learning

Razzaqul Ahshan
Sultan Qaboos University College of Engineering, Oman

Implementation of Learner Generated MOOC Through Inter-Institute Faculty - Student Peer Collaboration

Milind Khanapurkar[1], Tanuja Khatavka[2], Sonali Joshi[1], Kalyani Akant[1], Minakashai Atre[2], Mahesh Potdar[2]
1: G. H. Raisoni College of Engineering Nagpur (India), India; 2: P. V. G. College of Engineering and Technology, Pune, India

Hands-on Physics Experiments for K-6 Teachers at CERN

T.P. Nantsou, G.S. Tombras
Department of Physics, Section of Electronic Physics, National and Kapodistrian University of Athens, Greece

Factors Impacting Students' Creativity-related Self-efficacy in an Undergraduate Makerspace-based Course

S. Supraja, Fun Siong Lim, Sophia Tan, Shen Yong Ho, Beng Koon Ng, Andy W. H. Khong
Nanyang Technological University, Singapore

Effectiveness of introducing concept-wise questions through post-tests in ensuring student learning

Unnati Koppikar[1], Vijayalakshmi M[1], Poornima Mohanachandran[2], Ashok Shettar[3]
1: Centre for Engineering Education Research, KLE Technological University, India; 2: ekLakshya Innovation Labs Hubballi, India; 3: KLE Technological University, India

WIP1: Work In Progress 1

Virtual location: Online Webex 6
Scientific Chair: **Axel Böttcher**, HM Hochschule München University of Applied Sciences
Scientific Chair: **Batseba Mofolo-Mbokane**, University of the Witwatersrand

WORK IN PROGRESS: A workflow for programming learning, working on version control remote repositories

Isabel M. del Águila, Joaquín Cañadas, José R García
University of Almería, Spain

Work in Progress: Learning Fundamental Robotics Concepts Through Games at Bachelor Level

Gizem Ateş
Western Norway University of Applied Sciences, Norway

Work-In-Progress: Code Quality Issues of Computing Undergraduates

Oscar Karnalim[1,2], Simple Simon[1], William Chivers[1]
1: School of Information and Physical Sciences, University of Newcastle, Australia; 2: Faculty of Information Technology, Maranatha Christian University, Indonesia

Work in Progress: Perception of complex engineering problem among capstone design students

Alexa Ray Fernando[1,2], Jan Guiller Vergara[1], Christian Aldwin Canlapan[1]
1: College of Engineering, National University, Manila, Philippines; 2: Centre for Engineering Education, Universiti Teknologi Malaysia, Johor Bahru, Malaysia

Work-in-Progress: Computing Sentence Similarity for Short Texts using Transformer

1: Sino-French Engineer School, Beihang University, China; 2: Beihang Hangzhou Innovation Institute Yuhang, Hangzhou, China; 3: School of Computer Science and Engineering, Beihang University, China; 4: School of Humanities and Social Sciences, Beihang University, China

Penetration of Cooperative Learning in Engineering Education: A Systematic Literature Review

Preethi Baligar[1], Gopalkrishna Joshi[1], Ashok Shettar[1], Rohit Kandakatla[2]
1: KLE Technological University, India; 2: KG Reddy College of Engineering and Technology, Hyderabad

Ideas Generation and Integration: A Method For Teamwork In A Virtual Environment

Juan Carlos Márquez Cañizares[1,2], Juan-Carlos Rojas[1,3]
1: Escuela de Arquitectura, Arte y Diseño, Tecnologico de Monterrey, Mexico; 2: Writinglab, Institute for the Future of Education, Tecnologico de Monterrey, Mexico; 3: Institute for the Future of Education, Tecnologico de Monterrey, Mexico

Design of the Smart Schoolhouse Self-assessment Model

Marge Kusmin
Tallinn University, Estonia

models

Vidasha Ramnarain-Seetohul[1], Vandana Bassoo[1], Yasmine Rosunally[2]
1: University Of Mauritius, Mauritius; 2: University of the West of England London, UK

Work-In-Progress: Converting textual software engineering class diagram exercises to UML models

Florian Huber, Georg Hagel
University of Applied Sciences Kempten, Germany

Work-in-progress: Data Science Challenge-X: self-directed, competence-based, project-based learning

Fernando Benites, Monika Schlatter, Marcel Messerli, Rocco Custer
University of Applied Sciences Northwestern Switzerland, Germany

Work-in-Progress: The Development of a Smart-Environments Learning Kit for Computer Science Classes

Anatolij Fandrich, Guido Casjens, Nils Pancratz, Ira Diethelm
University of Oldenburg, Germany

8:30am - 12:30pm **Conference Online Support Slot 1**

10:30am - 11:00am **Coffee Break**

11:00am - 11:30am
Keynote 4: The need for a paradigmatic rupture in Education
Virtual location: Sidi Bou Said Room + Webex 1
Scientific Chair: **Felix Garcia Loro**, UNED
by **Jesus Maria Sousa**, Universidade da Madeira, Portugal

11:30am - 12:00pm
Keynote 5: The True Value of Diversity and Inclusion is Innovation!
Virtual location: Sidi Bou Said Room + Webex 1
Scientific Chair: **Felix Garcia Loro**, UNED
by **Leslie P. Martinich**, Competitive Focus, USA

12:00pm - 1:00pm

S10: Attracting, Engaging and Retaining Human Talent to Engineering
Virtual location: El Jem Room + Webex 2
Scientific Chair: **LESLIE PRICE MARTINICH**, Competitive Focus

Influence of COVID-19 on the university examination situation of students with impairments

Ulrike Quapp[1], Klaus Holschemacher[1,2]
1: HTWK Leipzig, Germany; 2: Structural Concrete Institute at HTWK Leipzig, Germany

Learning sign language basics supported by assistive technology

Paula Escudeiro Maria de Sá Escudeiro, Nuno Escudeiro, Márcia Campos
P. Porto, Portugal

Assessment of command structuring in Scratch programming using the SOLO taxonomy

Anastasios Ladias[1], Theodoros Karvounidis[2], Christos Douligeris[2]
1: Former Bureau of School Directors Ministry of Education Attica, Greece; 2: University of Piraeus

Active Learning of Students with Diverse Goals and Backgrounds in the Light of Industry 4.0 Requirements

Valery Vodovozov, Zoja Raud, Eduard Petlenkov
Tallinn University of Technology, Estonia

S11: Electronics and Robotics Education
Virtual location: Online Webex 3
Scientific Chair: **Imed Ben Dhaou**, Dal Al Hekma University

Towards developing a learning analytics dashboard for a massive online robotics competition

Saketh Kodumuru[2], Brendan Lucas[3], Vivek Sabanwar[1], Sachin Patil[1], Deepa Avudiappan[1], Parth Parikh[1], Kavi Arya[1]
1: Indian Institute of Technology Bombay, Mumbai, India; 2: Sastra University, Thanjavur, India; 3: Fr. Conceicao Rodrigues College of Engineering, Mumbai, India

Deploy Social Assistive Robot (SAR) to develop symbolic play and imitation skills in students with Autism Spectrum Disorder (ASD)

Konstantina Marathaki[1], Michalis Feidakis[2], Charalampos Patrikakis[2], Eleni Agrianiti[2]
1: Special Elementary School for Children with Autism of Piraeus, Greece; 2: University of West Attica

Teaching Microcontrollers - using Arduino as a Platform

Aruna S. Nayak, Namrata D. Hiremath, Vishwanath G.G., Umadevi F.M., Satyadhyan Chickerur
KLE Technological University, India

Formation of Skill standards for Printed Circuit Board Assembly Inspection by Define-Measure-Analyze- Improve-Control method

Wararuk Saimsakul
King Mongkut's University of Technology Thonburi, Thailand

S12: Ethical challenge and K-12 STEM Education Initiatives
Virtual location: Online Webex 4
Scientific Chair: **Lefkothea-Vasiliki Andreou**, University of Ioannina

Seek-and-Find-Drawings in the Research of Students' Conceptions in Computer Science Education

Nils Pancratz[1], Lisa Schütte[2], Ira Diethelm[1]
1: University of Oldenburg, Germany; 2: Studienseminar Leer, Germany

Student-led organisations and STEM education: a review

João Almeida, Ana Daniel
GOVCOPP, DCSPT, University of Aveiro, Portugal

Retention and support strategies for university students during COVID-19 pandemic

Argelia B. Urbina-Nájera, Rosa María Cantón-Croda
UPAEP-UNIVERSIDAD, Mexico

Technology Assessment as a Field of Professional Competency of Technoscience Society Engineers

Nadezhda Opletina, Maria Kunyaeva
Bauman Moscow State Technical University, Russian Federation

S13: Innovation in Engineering Education
Virtual location: Online Webex 5
Scientific Chair: **Abel Nyamapfene**, University College London

Development of Student's Innovative Solution Based on Work-Integrated Learning Activity

Natthakarn Suwannachan, Komkrit Chomsuwan
King Mongkut's University of Technology Thonburi, Thailand

Enhancing Students' Critical Thinking and Visualization Skills of Three-Dimensional

S14: Student-Centered Learning Environments
Virtual location: Online Webex 6
Scientific Chair: **Atef Abdrabou**, UAE University

Circular Challenge: education for the creation of a zero-waste world

Maria Elena Olvera Luna, Juan Olivares Arce
Tecnologico de Monterrey, Mexico

Industrial engineering practice: Process approach for equity and inclusion culture

M. Ileana Ruiz-Cantisani, Elvira G. Rincon-Flores, Graciela Caffarel-Rodriguez, Denisse I. Lopez-Ruiz

S9: Infrastructure and Technologies fro Engineering Education
Virtual location: Sidi Bou Said Room + Webex 1
Scientific Chair: **Hatem Ben Sta**, University of Tunis at El Manar

Integrating Research Elements into Computer Science Degree Programs: Preparing Students to Engage in Research Projects

Sigrid Schefer-Wenzl, Igor Miladinovic
Universtity of Applied Sciences Campus Vienna, Austria

Problems in Electromagnetics
Mohammed Bait-Suwailam, Joseph Jervase, Hassan Al Lawati, Zia Nadir
Sultan Qaboos University, Oman

Teaching reflective practice in teams: In-person and virtual activities
Nicola Brown
Massey University, New Zealand

The transition from study to work: Early career experiences of recent UCL Integrated Engineering Programme (IEP) graduates
Reem Al Saud, Abel Nyamapfene
University College London, United Kingdom

Tecnológico de Monterrey, Mexico

Quantifying the Impact of Online Teaching of Fundamentals of Communication Systems on Students' Achievements
Atef Abdrabou
UAE University, United Arab Emirates

Understand the influence of learning analytics dashboards on learner self-regulation and academic success
Yassine Safsouf[1], Khalifa Mansouri[3], Franck Poirier[2]
1: ISGA Marrakech MAROC; 2: Université Bretagne Sud, Vannes, France; 3: Université Hassan II, Casablanca, MAROC

Software engineering, bridging theory and practice in an agile learning environment
Dena Hussain, Linda Söderlindh
KTH Royal Institute of Technology, Sweden

Implementation of Virtual Concurrent Engineering Tools in Engineering Education 4.0
Paul Steffen Kleppe, Øystein Bjelland
NTNU, Norwegian University of Science and Technology, Norway

How self-reliant Peer Teaching can be set up to augment learning outcomes for university learners
Dirk Reith, Martina Grein, Daniel Röthgen, Jan Behrendt, Tobias Held, Michael Malschützky, Iris Groß
Bonn-Rhein-Sieg University of Applied Sciences, Germany

1:00pm - 2:00pm **Lunch Break**

2:00pm - 2:30pm

Round Table 2: Exploring the use of technology-based pedagogy for mathematics/mathematics education within Higher Education milieus (TechBP)
Virtual location: Online Webex 3
Scientific Chair: **Abel Nyamapfene**, University College London
Scientific Chair: **Anita Campbell**, University of Cape Town

Speakers:

- **Batseba Mofolo-Mbokane**, University of the Witwatersrand, South Africa
- **Jayaluxmi Naidoo**, University of KwaZulu-Natal, South Africa

2:00pm - 5:00pm **Conference Online Support Slot 2**

2:30pm - 4:00pm

ELearn4STEM: Technology Enhanced Learning and Assessment in STEM education - Special Session
Virtual location: Sidi Bou Said Room + Webex 1
Scientific Chair: **Cheniti Lilia**, Sousse University
Scientific Chair: **Alicia García-Holgado**, University of Salamanca

A closer look to STEM education across continents: insights from a multicultural panel discussion
Gillian Roehrig[1], Heba El-Deghaidy[2], Alicia García-Holgado[3], Dilek Karışan[4]
1: Department of Curriculum and Instruction, University of Minnesota, Minnesota, USA; 2: Department of Educational Studies, American University in Cairo, Cairo, Egypt; 3: GRIAL Research Group, Computer Science Department, University of Salamanca, Salamanca, Spain; 4: Department of Science and Mathematics Education, Adnan Menderes University, Aydın, Turkey

Innovative System Design for Remote Air Traffic Control Simulation Training
Man Liang
RMIT university, Australia

Towards a Conceptual Model for a Smart Open learning environment based on Computational Thinking
Benene Fradi, Lilia Cheniti
PRINCE Research Group ISITCom University of Sousse, Tunis

Remote Hardware-in-the-Loop Laboratory and its Application in Engineering Education
Derk Gonschor[1], Marco Jung[1], Jean Patric Da Costa[2], Ron Brandl[3]
1: Hochschule Bonn-Rhein-Sieg, Germany; 2: Universidade Tecnologica Federal do Parana, Brazil; 3: Fraunhofer IEE, Germany

S15: Gamification tools and frameworks
Virtual location: El Jem Room + Webex 2
Scientific Chair: **Carina González**, University of La Laguna
Scientific Chair: **Jorge Manuel Mendonça**, Polythechnic of Porto - School of Engineering

Flipped classroom in the meaningful learning of the students of the Basic Education Career: Case study Technical University of Ambato
Cristina Páez-Quinde
Universidad Técnica de Ambato, Ecuador

Gamification in the teaching of prevention measures for covid 19
Mayra Barrera
Universidad Técnica de Ambato, Ecuador

Gamification as a strategy in collaborative learning against virtual education in times of pandemic
Cristina Páez-Quinde
Universidad Técnica de Ambato, Ecuador

SPArK-Bot: An All-In-One Educational Robotic Platform
Parth Parikh[1], Akash Rasal[1], Khushboo Mundada[1], Shantanu Kalamdane[1], Urmila Kalshetti[2]
1: BE Computer, PVG's COET; 2: Assistant Professor, Department of Computer Engineering, PVG's COET

Implementation of hybrid chemistry labs as a learning strategy in post-COVID times
Angelica Lizeth Sánchez López, Luis Marcelo Lozano Sánchez, Janet Castañeda Sedano, Alejandro Parra Córdova, Jackeline Iturbe Ek
Tecnologico de Monterrey.

Can Social Robots Effectively Elicit Curiosity in STEM Topics from K-1 Students During Oral Assessments?
Alexander Johnson, Alejandra Martin, Marlen Quintero, Alison Bailey, Abeer Alwan
University of California - Los Angeles, United States of America

S16: Non-traditional Lab concepts
Virtual location: Online Webex 3
Scientific Chair: **Da Yang Tan**, Singapore University of Technology and Design
Scientific Chair: **Vianney Lara**, Tecnologico de Monterrey

Design Process of Extended Reality Educational Resources in Engineering: A Comparison of Three Cases in Latin American Universities
Vianney Lara-Prieto[1], M. Ileana Ruiz-Cantisani[1], Claudio Mourgues[2], Luis A. Pinzón-Salcedo[3], Juanita Bernal-Alvarado[3], L. Aarón Ramírez-Robles[1]
1: Tecnologico de Monterrey; 2: Pontificia Universidad Católica de Chile; 3: Universidad de los Andes

One kit to rule them all: designing take home lab kits at programme level
Adam Funnell, Jonathan Fullwood, Panagiotis Lazari, Gavin Williams
University of Sheffield, United Kingdom

Virtual laboratory workshop in physics
Iliya Sheinman, Natalia Kuzmina
Saint-Petersburg Electrotechnical University "LETI", Saint-Petersburg, Russia

Creating Educational and Research Tools for QoS-Focused Software-Defined Networking Projects
Sorin Buzura, Bogdan Iancu, Vasile Dadarlat
Technical University of Cluj-Napoca, Romania

Learning CAN bus communication with a remote laboratory
Ignacio Del Villar[1], Luis Rodriguez-Gil[2], Pablo Orduña[2]
1: Public University of Navarra, Spain; 2: LabsLand

Virtual Dissection Activities as a Strategy for Blended Synchronous Learning in the New Normal
Da Yang Tan, Wei Lek Kwan, Li Ling Apple Koh, Gim-Yang Maggie Pee, Zhen Yong Yeo
Singapore University of Technology and Design, Singapore

S17: Data driven engineering education
Virtual location: Online Webex 4
Scientific Chair: **Ana Pavani**, Pontifícia Universidade Católica do Rio de Janeiro (PUC-Rio)

A COVID-Band for a Safer School Environment
Syed Haris Roman Hussaini, Akrom Mamasaliev, Amir Risan, Khalid Al Duweik, Jinane Mounsef,

S18: Student-Centered Learning Environments
Virtual location: Online Webex 5
Scientific Chair: **Ming-Der May**, Lunghwa University of Science and Technology

Experiential learning at home in an engineering thermodynamics course
David A Buentello-Montoya, Luis E Garcia-

WIP2: Work In Progress 2
Virtual location: Online Webex 6
Scientific Chair: **Abel Nyamapfene**, University College London
Scientific Chair: **Lefkothea-Vasiliki Andreou**, University of Ioannina

Student Experiences of PBL During Remote Learning: A Case Study

Boutheina Tlili
Rochester Institute of Technology - Dubai, United Arab Emirates

Intelligent analysis of labor market and educational content matching

Alexey Poletaykin[1,2], Sergey Sinitsa[1], Lyubov Danilova[2], Yulia Shevtsova[2], Nadezhda Dvurechenskaya[2], Ekaterina Kunz[2]
1: Kuban State University, Russian Federation; 2: Siberian State University of Telecommunications and Information Science, Russian Federation

Visualization of Students' Solutions as a Sequential Network

Nathan Hurtig[1], Joe Hollingworth[1], Olga Scrivner[1,2,3]
1: Rose-Hulman Institute of Technology, United States of America; 2: Indiana University; 3: Harrisburg University of Science and Technology

Semi-automatic generation of textual exercises for software engineering education

Florian Huber, Georg Hagel
University of Applied Sciences Kempten, Germany

Analysing Students' Problem Solving Capabilities to Support Teaching in Software Development

Axel Böttcher, Robin Grellner
HM Hochschule München University of Applied Sciences, Germany

A Digital Twin implementation for Mobile and collaborative robot scenarios for teaching robotics based on Robot Operating System

Edison Altamirano Avila, Carlos Vázquez Hurtado, Diego Prado Chapa, Ivan Diaz Arenas
ITESM, Mexico

Amezquita, Luis M Rico-Gutierrez
Tecnológico de Monterrey, Mexico

Natural Language Processing for Learning Assessment in STEM

Patricia Caratozzolo[1,2], Jorge Rodriguez-Ruiz[2], Alvaro Alvarez-Delgado[2]
1: Institute for the Future of Education; 2: Tecnologico de Monterrey, Mexico

The use of web 3.0 tools for reading skill development: Case blogs in virtual education

Elsa Mayorie Chimbo Cáceres, Estefanía Nayeli Barragán Mejía, Mauricio José Sánchez Galindo, Ruth Elizabeth Infante Paredes
Universidad Técnica de Ambato, Ecuador

What do teachers think and do about Sustainability at engineering degrees? A new instrument to know it.

Zaloa Aginako, Karmele Artano, Mikel Garmendia, Teresa Guraya, Pilar Martínez-Blanco, M.Begoña Peña-Lang
University of the Basque Country, Spain

Student-led organisations impact on STEM students' entrepreneurial behaviour: insights from Portugal and Brazil

Ana Daniel, João Almeida
GOVCOPP, DCSPT, University of Aveiro, Portugal

Competence development in student-centered learning environments

Daniel Pittich, Tobias Ludwig
Technical University of Munich, Germany

Luran Wang, Abel Nyamapfene
University College London, United Kingdom

The Jennifer Aniston Neuron and Other Adventures in Neuroscience: an Informal Learning Environment

Panagiota Koulouri, Panagiota Papapetrou, Aikaterini Kiropoiou, Lefkothea-Vasiliki Andreou
University of Ioannina, Greece

WaterMobile & WaterTalk– Teaching K-12 Students about Water through Hands-on Experimentation.

Kauser Jahan, Ning Wang, Nicholas Matarazzo, Marc Ignarri, Jonathan Bell, Genna Brunetta, Patrick Marshall, Ryan Petzitillo
Rowan University, United States of America

Gamit! Interactive platform for gamification

Elvira G. Rincon-Flores[1], Nadia K. Rodriguez-Rodriguez[2], Brenda N. Santos-Guevara[1], Alberto Matsuura Sonoda[2], Hernán A. Quintana-Cruz[2]
1: Tecnológico de Monterrey, Mexico; 2: Universidad de Lima, Peru

Work-in-Progress: A Holistic Approach to Bridging the Gap between Power Engineering Education and Electric Power Industry

Hua Chai[1], Jayashri Ravishankar[1], Siva Krishnan[2], Matthew Priestley[1]
1: University of New South Wales, Australia; 2: Deakin University, Australia

Work-in-Progress: LabVIEW Application Programming Interfaces for Remote Access to Oscilloscope and Arbitrary Waveform Generator

Ivan Alexandrovich Rumyancev[1], Margarita Olegovna Aivazova[2], Eleonora Anatolevna Zakharova[2]
1: Peter the Great St. Petersburg Polytechnic University, Russian Federation; 2: BSTU «VOENMEH» named after D.F. Ustinov, Russian Federation

4:00pm - 4:30pm **Coffee Break**

4:30pm - 5:30pm **Closing, Awards Ceremony, and Announcement of EDUCON 2023**
Virtual location: **Sidi Bou Said Room + Webex 1**