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Chair: Molly Hathaway Goldstein (Purdue University, USA)

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Sabine Hirschmugl-Gaisch (University of Teacher Education Styria, Austria)

Petra Huber (Children's Office Graz, Austria)

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Hazem Said (University of Cincinnati, USA)

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Marcus Johnson (University of Cincinnati, USA)

Helen Meyer (University of Cincinnati, USA)

F3F: Upper Division Computer Science

Chair: Tony Clear (Auckland University of Technology, New Zealand)

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Serengul Smith (Middlesex University, United Kingdom)

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Celso Olivete Júnior (Universidade Estadual Paulista (UNESP), Brazil)

Daniilo Medeiros Eler (Universidade Estadual Paulista (UNESP), Brazil)

Rogério Eduardo Garcia (Universidade Estadual Paulista (UNESP), Brazil)

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Marcelo Paglione (Federal University of Technology of Paraná (UTFPR), Brazil)
Iuri G.P. Mardegan (Federal University of Technology of Paraná (UTFPR), Brazil)

F3G: Remote Laboratories

Chair: Glen Archer (Michigan Technological University, USA)

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Ignacio Angulo (DeustoTech - Deusto Institute of Technology, Spain)
Unai Hernández (DeustoTech - Deusto Institute of Technology, Spain)
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Chair: Cem Sahin (Drexel University, USA)

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Rahul Gavas (Tata Consultancy Services Ltd., India)

Debatri Chatterjee (Tata Consultancy Services Ltd., India)

Sanjoy Saha (Jadavpur University, India)

F3I: Engineering Discipline Specific

Chair: Yong-Kyu Jung (Gannon University, USA)

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Monica Cardella (Purdue University, USA)
Amr Kandil (Purdue University, USA)

F3J: Problem Solving

Chair: Axel Böttcher (Munich University of Applied Sciences, Germany)

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Joel Alejandro Mejia (Angelo State University, USA)

Marlon Mitchell (University of Illinois at Urbana-Champaign, USA)

SIB: Peer Teaching and Learning

Chair: Kassim Tarhini (United States Coast Guard Academy, USA)

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Yifan Guo (NC State University, USA)

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Jocelyn Simmonds (University of Chile, Chile)

Adriana Keiko Nishida (Federal University of ABC, Brazil)

Monael Pinheiro Ribeiro (Federal University of ABC, Brazil)

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Edward F Gehringer (North Carolina State University, USA)

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D. Scott McCrickard (Virginia Tech, USA)

Sophia M. Nguyen (Virginia Tech, USA)

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Jonathan Alvarez Ariza (Uniminuto, Colombia)

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Michael Fosmire (Purdue University, USA)

Nastasha Johnson (Purdue University, USA)

Nathan Mentzer (Purdue University, USA)

SID: Inclusivity and Diversity Initiatives

Chair: Rebekah Michael (University of Cincinnati, USA)

8:30 AM - 10:00 AM

Room: 130C

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D. Arias (Pontificia Universidad Catolica del Peru, Peru)

D. Quiroz (Pontificia Universidad Catolica del Peru, Peru)

D. Elias (Pontificia Universidad Catolica del Peru, Peru)

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Edna D. Canedo (University of Brasília, Brazil)

Juliano Pretz (Universidade de Brasília, Brazil)

Eliakim Zacarias (Universidade de Brasília, Brazil)

Giovanni Del Galdo (Ilmenau University of Technology, Germany)

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Luis Daniel Otero (Florida Institute of Technology, USA)

Nicholas Gagliardo (Florida Institute of Technology, USA)

Dennis Dalli (Florida Institute of Technology, USA)

Julie Moore (Florida Institute of Technology, USA)

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Brian Faulkner (University of Illinois at Urbana-Champaign)
Dong San Choi (University of Illinois at Urbana-Champaign, USA)
Geoffrey L. Herman (University of Illinois at Urbana-Champaign, USA)

SIE: Collaborative Teaching and Learning

Chair: Kurt Thoroughman (Washington University in St. Louis, USA)

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Anna Yatskar (Brandeis University, USA)
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Chair: Jeong Yang (Texas A&M University-San Antonio, USA)

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Robert J. Albright (University of Portland, USA)
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Timothy A. Doughy (University of Portland, USA)

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Samuel Sambasivam (Azusa Pacific University, USA)
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Luiz Ricardo Begosso (Centro de Pesquisas em Informatica - Cepein, Brazil)
Luiz Carlos Begosso (Faculdade de Tecnologia de Assis, Brazil)
Raissa Helena Begosso (BS Tecnologia, Brazil)

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Yorah Bosse (Federal Univ. of Mato Grosso do Sul, Brazil)
Marco Aurélio Gerosa (University of São Paulo, Brazil)

SIG: Makers, Making, and Makerspaces

Chair: Tom J. Zajdel (University of California, Berkeley, USA)

8:30 AM - 10:00 AM

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Ying Qian (Nanjing Institute of Technology, P.R. China)

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Amir Khalilollahi (Pennsylvania State University Erie, the Behrend College, USA)
Philip Martone (Pennsylvania State University Erie, the Behrend College, USA)

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Alex Dillon (Franklin W. Olin College of Engineering, USA)
Jonathan D. Stolk (Franklin W. Olin College of Engineering, USA)
Michael Gross (Wake Forest University, USA)

SII: Undergraduate Research

Chair: Asad Azemi (Pennsylvania State University, USA)

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Katherine M. Ehlert (Clemson University, USA)
Penelope M. D. Vargas (Clemson University, USA)
Courtney J. Faber (The College of New Jersey, USA)
Rachel L. Kajfez (The Ohio State University, USA)
Anne M. McAlister (The Ohio State University, USA)

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Andrew Rose (University of Pittsburgh at Johnstown, USA)

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Russell A. Long (Purdue University, USA)

Richard A. Layton (Rose-Hulman Institute of Technology, USA)

Susan M. Lord (University of San Diego, USA)

Marisa K. Orr (Louisiana Tech University, USA)

Catherine E. Brawner (Research Triangle Educational Consultants, USA)

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Room: 170B

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Susan K. Donohue (University of Virginia, USA)

Larry G. Richards (University of Virginia, USA)

S2C: Computer-Based Learning and Courseware Technologies II

Chair: Sven Esche (Stevens Institute of Technology, USA)

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Room: 130B

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Cyndi Rader (Colorado School of Mines, USA)

Tracy Camp (Colorado School of Mines, USA)

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B. Korrapati (Arizona State University, USA)

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Y.-F. Huang (University of Notre Dame, USA)

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Leo C. Ureel, II (Michigan Technological University, USA)
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S2D: Diversity: Women and Girls

Chair: Alison Clear (EIT, New Zealand)

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Room: 130C

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Jonathan Tomkin (University of Illinois at Urbana Champaign, USA)
Matthew West (University of Illinois at Urbana-Champaign, USA)
Geoffrey L. Herman (University of Illinois at Urbana-Champaign, USA)

S2E: PK-12: Perceptions of STEM

Chair: Martin Kandlhofer (Graz University of Technology, Austria)

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Room: 140A

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Monica Cardella (Purdue University, USA)

***LONG TERM EFFECTS OF EDUCATIONAL ROBOTS ON A GRADE 9 GIRL'S
PERCEPTIONS OF SCIENCE AND MATH.....1794***

Ahmad Khanlari (University of Toronto, Canada)

S2F: Computing Discipline Specific

Chair: Rebecca Reck (Kettering University, USA)

10:30 AM - 12:00 PM

Room: 140B

A SOFTWARE DEVELOPMENT COURSE BASED ON SERVER-SIDE JAVASCRIPT.....1798

Mark A. Holliday (Western Carolina University, USA)

Andrew S. Scott (Western Carolina University, USA)

***REPORT OF A DISTANCE LEARNING COURSE OF SPECIALIZATION
IN INFORMATION TECHNOLOGY AT A BRAZILIAN PUBLIC UNIVERSITY.....1803***

Guiou Kobayashi (Federal University of ABC, Brazil)

Francisco de Assis Zampiroli (Federal University of ABC, Brazil)

José Artur Quilici-Gonzalez (Federal University of ABC, Brazil)

WHO IS THE ENGINEERING TECHNOLOGY GRADUATE AND WHERE DO THEY GO?.....1810

Anne M. Lucietto (Purdue University, USA)

ELICITING FEATURES TO BUILD COLLABORATIVE LEARNING OBJECTS.....N/A

Bruno Elias Penteado (University of São Paulo, Brazil)

Fernando Tiosso (University of São Paulo, Brazil)

EVALUATION OF ACOUSTICAL POSITION DETERMINATION IN A CLASSROOM SCENARIO.....1817

Robin Nicolay (University of Rostock, Germany)

Thomas Mundt (University of Rostock, Germany)

S2G: Student Approaches to Learning

Chair: Jill Nelson (George Mason University, USA)

10:30 AM - 12:00 PM

Room: 140C

***A CASE STUDY OF STUDENTS' ENGAGEMENT
IN A CONTROL SYSTEMS HOMEWORK PROBLEM.....1824***

Jessica Swenson (Tufts University, USA)

Kristen Wendell (Tufts University, USA)

***A QUANTITATIVE CASE STUDY ON STUDENTS' STRATEGY
FOR USING AUTHORIZED CHEAT-SHEETS.....1828***

Yang Song (NC State University, USA)

Yifan Guo (NC State University, USA)

David Thuente (NC State University, USA)

PRE-COLLEGE STUDENTS' USE OF SYSTEMS ENGINEERING METHODS IN DESIGN.....1837

Aaron W. Johnson (Tufts University, USA)

Sara Willner-Giwerc (Tufts University, USA)

Paul T. Grogan (Stevens Institute of Technology, USA)

Ethan E. Danahy (Tufts University, USA)

S2H: Peer Tutoring and Mentoring

Chair: Matthew Barner (Oregon State University, USA)

10:30 AM - 12:00 PM

Room: 160A

PEER LEARNING ASSISTANTS IN UNDERGRADUATE COMPUTER SCIENCE COURSES.....1845

Inna Pivkina (New Mexico State University, USA)

***THE IMPACT OF NEAR-PEER MENTORING ON SELF-EFFICACY
IN AN INTRODUCTORY ENGINEERING COURSE.....1849***

Tanya Kunberger (Florida Gulf Coast University, USA)
Chris Geiger (Florida Gulf Coast University, USA)

***GUIDELINES TO PRODUCING STRUCTURED INTEROPERABLE DATA FROM OPEN ACCESS
REPOSITORIES: AN EXAMPLE OF INTEGRATION OF DIGITAL REPOSITORIES OF HIGHER
EDUCATIONAL INSTITUTIONS FROM LATAM.....1853***

Nelson Piedra (Universidad Técnica Particular de Loja, Ecuador)
Janneth Chicaiza (Universidad Técnica Particular de Loja, Ecuador)
Jorge Lopez-Vargas (Universidad Técnica Particular de Loja, Ecuador)
Edmundo Tovar Caro (Universidad Politécnica de Madrid, Spain)

***ESTABLISHING LEARNING COMMUNITIES AMONG ENGINEERING FRESHMEN
THROUGH PEER-GROUP TUTORING PROGRAM.....1862***

Ben Oni (Tuskegee University, USA)
Vimal Viswanathan (Tuskegee University, USA)

S2I: Retention of First Year Students

Chair: Ciaran Moore (Victoria University of Wellington, New Zealand)

10:30 AM - 12:00 PM

Room: 160B

***ENGAGE AND EDUCATE: ENGINEERING LABORATORY ACTIVITIES
FOR FIRST-YEAR ENGINEERING STUDENTS.....1867***

Ramakrishnan Sundaram (Gannon University, USA)

***ENRICHED STUDENT GUIDANCE AND ENGAGEMENT IN LOWER LEVEL
ENGINEERING GATEKEEPER COURSES.....1872***

Horacio Vasquez (The University of Texas Rio Grande Valley, USA)
Arturo A. Fuentes (The University of Texas Rio Grande Valley, USA)
Javier A. Kypuros (The University of Texas Rio Grande Valley, USA)

***TECHNOLOGY-ENABLED, AFTER-HOURS, ASYNCHRONOUS, PEER-LED SUPPLEMENTARY
INSTRUCTION AND MENTORING IN ENGINEERING GATEKEEPER COURSES.....1880***

Javier A. Kypuros (The University of Texas Rio Grande Valley, USA)
Arturo A. Fuentes (The University of Texas Rio Grande Valley, USA)
Horacio Vasquez (The University of Texas Rio Grande Valley, USA)
Stephen W. Crown (The University of Texas Rio Grande Valley, USA)
Virgil Pierce (The University of Texas Rio Grande Valley, USA)

***S3A: Panel: Teaching Teachers to Teach Diverse Students in Computer Science: Content and Resources for In-
person and Online Delivery***

1:30 PM – 3:00 PM

Room: 170A

***TEACHING TEACHERS TO TEACH DIVERSE STUDENTS IN COMPUTER SCIENCE: CONTENT
AND RESOURCES FOR IN-PERSON AND ONLINE DELIVERY.....1883***

James P. Cohoon (University of Virginia, USA)
Joanne M. Cohoon (University of Virginia, USA)
Leslie G. Cintron (University of Virginia, USA)

S3B: Special Session: The Behavioral Economics of Instructional Decision Making

1:30 PM – 3:00 PM

Room: 170B

THE BEHAVIORAL ECONOMICS OF INSTRUCTIONAL DECISION MAKING.....1885

Cory Hixson (Rowan University, USA)

Stephanie Cutler (Penn State, USA)

James J. Pembridge (Embry-Riddle Aeronautical University, USA)

S3C: Redesigning Laboratory Experiences

Chair: Joshua Earnest (National Institute of Technical Teachers Training and Research, Bhopal, India)

1:30 PM – 3:00 PM

Room: 130B

PRACTICAL LABORATORY CLASSES TO IMPROVE ENGAGEMENT AND ACHIEVEMENT AMONGST ENGINEERING STUDENTS TAKING FIRST-YEAR MATHEMATICS.....1888

Ciaran Moore (Victoria University of Wellington, New Zealand)

Craig Watterson (Victoria University of Wellington, New Zealand)

James Eldridge (Victoria University of Wellington, New Zealand)

CHANGE THE TRADITIONAL WAY OF TEACHING ELECTRIC DRIVES LABORATORY WITH DESIGN OF EXPERIMENT.....1895

Lin Zhao (Gannon University, USA)

Fong Mak (Gannon University, USA)

A HANDS-ON MODULAR LABORATORY ENVIRONMENT TO FOSTER LEARNING IN CONTROL SYSTEM SECURITY.....1901

Pallavi P. Deshmukh (Virginia Tech, USA)

Cameron D. Patterson (Virginia Tech, USA)

William T. Baumann (Virginia Tech, USA)

EVALUATION OF A VIDEO GAME ADAPTATION FOR MECHANICAL ENGINEERING EDUCATIONAL LABORATORIES.....1910

Yizhe Chang (Stevens Institute of Technology, USA)

El-Sayed Aziz (Stevens Institute of Technology, USA)

Zhou Zhang (Stevens Institute of Technology, USA)

Mingshao Zhang (Stevens Institute of Technology, USA)

Sven K. Esche (Stevens Institute of Technology, USA)

S3D: Innovative Use of Tools

Chair: Georges El-Howayek (Valparaiso University, USA)

1:30 PM – 3:00 PM

Room: 130C

ENHANCE HANDS ON EXPERIENCE OF SYSTEM AND CONTROL USING LOW COST LEGO KITS.....1916

Yi Wu (Pennsylvania State University Erie, the Behrend College, USA)

Charlotte de Vries (Pennsylvania State University Erie, the Behrend College, USA)

Oladipo Onipede (Pennsylvania State University Erie, the Behrend College, USA)

Melanie Ford (Pennsylvania State University Erie, the Behrend College, USA)

A SATELLITE GROUND STATION FOR TEACHING DIGITAL AND WIRELESS COMMUNICATIONS.....1922

Miguel Bazdresch (Rochester Institute of Technology, USA)

Sneha Velayudhan (Rochester Institute of Technology, USA)

William Johnson (Rochester Institute of Technology, USA)

APPLICATION OF LOW-COST 3D SCANNING TECHNOLOGIES TO THE DEVELOPMENT OF EDUCATIONAL AUGMENTED REALITY CONTENT.....1926

Jorge D. Camba (University of Houston, USA)
Alejandro Bonnet De Leon (Universidad de La Laguna, Spain)
Jorge de la Torre (Universidad de La Laguna, Spain)
Jose Luis Saorin (University de La Laguna, Spain)
Manuel Contero (Universidad Politécnica de Valencia, Spain)

TEACHERS' PERCEPTIONS ON TRADITIONAL AND NON-TRADITIONAL DATA VISUALIZATION FOR PEDAGOGICAL DECISION-MAKING.....N/A

Maria Cavalcanti (Federal University of Alagoas, Brazil)
Ranilson Paiva (Federal University of Campina Grande, Brazil)
Patrícia Espinheira Ospina (Federal University of Pernambuco, Brazil)
Ig Ibert Bittencourt (Federal University of Alagoas, Brazil)
Esther de Freitas (Federal University of Alagoas, Brazil)
Sergio Amorim (Federal University of Alagoas, Brazil)
Alan Pedro da Silva (Federal University of Alagoas, Brazil)

AN APPROACH TO USING RASP TOOLS IN ANALOG SYSTEMS EDUCATION.....1932

Michelle Collins (Georgia Institute of Technology, USA)
Jennifer Hasler (Georgia Institute of Technology, USA)
Sahil Shah (Georgia Institute of Technology, USA)

S3E: PK-12: Assessment and Evaluation Tools and Strategies

Chair: Nathan M. Hicks (Purdue University, USA)

1:30 PM – 3:00 PM

Room: 140A

NO PATTERNS IN PATTERN RECOGNITION: A SYSTEMATIC LITERATURE REVIEW.....1940

Senay Purzer (Purdue University, USA)
Annwesa Dasgupta (Purdue University, USA)

DEVELOPMENT OF AN ASSESSMENT FOR MEASURING MIDDLE SCHOOL STUDENT ATTITUDES TOWARDS ROBOTICS ACTIVITIES.....1943

Jennifer Cross (Carnegie Mellon University, USA)
Emily Hammer (Carnegie Mellon University, USA)
Lauren Zito (Carnegie Mellon University, USA)
Illah Nourbakhsh (Carnegie Mellon University, USA)
Debra Bernstein (TERC, USA)

A SYSTEMATIC MAPPING STUDY ON ASSESSING COMPUTATIONAL THINKING ABILITIES.....1951

Ana Liz Souto O. de Araujo (Federal University of Campina Grande, Brazil)
Wilkerson L. Andrade (Federal University of Campina Grande, Brazil)
Dalton D. Serey Guerrero (Federal University of Campina Grande, Brazil)

IMPACT FOR FEMALE STUDENTS OF AN INTEGRATED STEM PBL SUMMER CURRICULUM ON CONTENT KNOWLEDGE MASTERY AND POST-SECONDARY MATRICULATION.....N/A

Robert M. Capraro (Texas A&M University, USA)
Mary M. Capraro (Texas A&M University, USA)
Sandra B. Nite (Texas A&M University, USA)
Luciana R. Barroso (Texas A&M University, USA)
Chon Brooks (Texas A&M University, USA)

INNOVATIVE METHODS FOR EVALUATING THE SCIENCE CAPITAL OF YOUNG CHILDREN.....1960

Annie Padwick (Northumbria University, United Kingdom)
Opeyemi Dele-Ajayi (Northumbria University, United Kingdom)
Carol Davenport (Northumbria University, United Kingdom)
Rebecca Strachan (Northumbria University, United Kingdom)

S3F: Software Engineering Processes

Chair: Yolanda Martinez-Trevino (Tecnologico de Monterrey, Mexico)

1:30 PM – 3:00 PM

Room: 140B

INVESTIGATING HOW FEATURES OF ONLINE LEARNING SUPPORT SOFTWARE PROCESS EDUCATION.....1965

Eduardo Fernandes (Federal University of Minas Gerais (UFMG), Brazil)
Johnatan Oliveira (Federal University of Minas Gerais (UFMG), Brazil)
Eduardo Figueiredo (Federal University of Minas Gerais (UFMG), Brazil)

AN AGILE SOFTWARE ENGINEERING PROCESS IMPROVEMENT GAME.....1973

Bruce R. Maxim (University of Michigan-Dearborn, USA)
Raspinder Kaur (University of Michigan-Dearborn, USA)
Christopher Apzynski (University of Michigan-Dearborn, USA)
David Edwards (University of Michigan-Dearborn, USA)
Ethan Evans (University of Michigan-Dearborn, USA)

UTILIZING OPEN SOURCE SOFTWARE IN TEACHING PRACTICE-BASED SOFTWARE ENGINEERING COURSES.....1977

Mohsen Dorodchi (University of North Carolina, Charlotte, USA)
Nasrin Dehbozorgi (University of North Carolina, Charlotte, USA)

AGILE METRICS FOR A UNIVERSITY SOFTWARE ENGINEERING COURSE.....1982

Christoph Matthies (University of Potsdam, Germany)
Thomas Kowark (University of Potsdam, Germany)
Matthias Uflacker (University of Potsdam, Germany)
Hasso Plattner (University of Potsdam, Germany)

LEVERAGING ROLE PLAY TO EXPLORE SOFTWARE AND GAME DEVELOPMENT PROCESS.....1987

Adrienne Decker (Rochester Institute of Technology, USA)
David Simkins (Rochester Institute of Technology, USA)

S3G: Engineering in Global Context

Chair: Neha Choudhary (Purdue University, USA)

1:30 PM – 3:00 PM

Room: 140C

THE RESILIENT CIVIL ENGINEER WITH THE CHANGING GLOBAL ENVIRONMENT.....1992

Hudson Jackson (U.S. Coast Guard Academy, USA)
Kassim Tarhini (U.S. Coast Guard Academy, USA)
Sharon Zelmanowitz (U.S. Coast Guard Academy, USA)
Alina Zapalska (U.S. Coast Guard Academy, USA)

ENGINEERING THE ENGINEERING PROGRAM: THE YEAR OF DISCOVERY.....2001

Claudio da Rocha Brito (Science and Education Research Council, Brazil)
Melany M. Ciampi (World Council on Systems Engineering and Technology Information, Brazil)
Victor F. A. Barros (Science and Education Research Council, Portugal)
Luis Amaral (Computer Graphics Center, Portugal)
Rosa Vasconcelos (University of Minho, Portugal)

***STUDENT PERCEPTIONS OF GLOBAL KNOWLEDGE AND SKILLS ACQUIRED
DURING A FIVE-WEEK STUDY ABROAD PROGRAM.....2005***

Robert O'Connell (University of Missouri, USA)
Miguel Ayllon (University of Missouri, USA)

***MEASURING GLOBAL AWARENESS INTEREST DEVELOPMENT OF ENGINEERING
AND INFORMATION TECHNOLOGY STUDENTS.....2009***

Sadan Kulturel-Konak (Penn State Berks, USA)
Abdullah Konak (Penn State Berks, USA)
Ivan E. Esparragoza (Penn State Brandywine, USA)
Gül E. Okudan Kremer (Penn State University Park, USA)

S3H: Literature Reviews and Analyses

Chair: Carlos Mugruza-Vassallo (Universidad de Lima, Peru)

1:30 PM – 3:00 PM

Room: 160A

***VISUALIZING SYSTEMATIC LITERATURE REVIEWS
TO IDENTIFY NEW AREAS OF RESEARCH.....2014***

Allison Godwin (Purdue University, USA)

***UNDERSTANDING ENGINEERING THROUGH THE ENGINEERING JOURNAL
OF THE COLOMBIAN UNIVERSITY OF LOS ANDES.....2022***

Mariana Tafur-Arciniegas (University of Los Andes, Colombia)

***LEARNING PRINCIPLES IN PROGRAM VISUALIZATIONS:
A SYSTEMATIC LITERATURE REVIEW.....2028***

Jeisson Hidalgo-Céspedes (Universidad de Costa Rica, Costa Rica)
Gabriela Marín-Raventós (Universidad de Costa Rica, Costa Rica)
Vladimir Lara-Villagrán (Universidad de Costa Rica, Costa Rica)

***AUTHORSHIP/AUTHORING POSSIBILITIES IN THREE-DIMENSIONAL VIRTUAL WORLDS IN
EDUCATION: THE STATE OF ART FROM A SYSTEMATIC REVIEW.....2037***

Leander Cordeiro de Oliveira (Universidade Tecnológica Federal do Paraná - UTFPR, Brazil)
Marília Abrahão Amaral (Universidade Tecnológica Federal do Paraná - UTFPR, Brazil)
Danúbia BuenoEspíndola (Universidade Federal do Rio Grande - FURG, Brazil)
Regina Barwaldt (Universidade Federal do Rio Grande - FURG, Brazil)
Sílvia S. C. Botelho (Universidade Federal do Rio Grande - FURG, Brazil)

S3I: Students as Learners

Chair: Ben Oni (Tuskegee University, USA)

1:30 PM – 3:00 PM

Room: 160B

PEDAGOGICAL STANDARD FOR THE ANALYSIS OF VIRTUAL LEARNING ENVIRONMENTS.....2046

Rosana Abutakka Vasconcelos dos Anjos (The Federal University of Mato Grosso, Brazil)
Kátia Morosov Alonso (The Federal University of Mato Grosso, Brazil)
Cristiano Maciel (The Federal University of Mato Grosso, Brazil)
Alexandre Martins dos Anjos (The Federal University of Mato Grosso, Brazil)
Eunice dos Santos Nunes (The Federal University of Mato Grosso, Brazil)

***UNDERSTANDING SIMILARITIES AND DIFFERENCES IN STUDENTS ACROSS
FIRST-YEAR COMPUTING MAJORS.....2054***

Glen Archer (Michigan Technological University, USA)
Leonard Bohmann (Michigan Technological University)
Allison Carter (Michigan Technological University, USA)
Christopher Cischke (Michigan Technological University, USA)
Linda M. Ott (Michigan Technological University, USA)
Leo Ureel (Michigan Technological University, USA)

***COURSE MATERIAL DELIVERY IN ENGINEERING
USING BRAIN-BASED LEARNING TECHNIQUES.....2062***

John Solomon (Tuskegee University, USA)
Vimal Viswanathan (Tuskegee University, USA)
Vinu Unnikrishnan (University of Alabama, USA)
Eric Hamilton (Pepperdine University, USA)

THE VISUAL DIPOLE - A KEY TO UNDERSTANDING ANTENNA THEORY.....2067

Paul Crilly (United States Coast Guard Academy, USA)

S3J: Teaching and Learning Experiences in Engineering Education I

Chair: Jennifer Winikus (Michigan Technological University, USA)

1:30 PM – 3:00 PM

Room: 160C

USING EVERYDAY OBJECTS TO ENGAGE STUDENTS IN STANDARDS EDUCATION.....2070

Margaret Phillips (Purdue University, USA)
Paul McPherson (Purdue University, USA)

***OPTIMIZATION AND IMPROVEMENTS OF A MOODLE-BASED ONLINE LEARNING SYSTEM
FOR C PROGRAMMING.....2075***

Xiaohong Su (Harbin Institute of Technology, P.R. China)
Jing Qiu (Harbin Institute of Technology, P.R. China)
Tiantian Wang (Harbin Institute of Technology, P.R. China)
Lingling Zhao (Harbin Institute of Technology, P.R. China)

***MULTI-DIMENSIONAL AND CUSTOMIZABLE OPEN-SOURCE LABWARE
FOR PROMOTING BIG DATA ANALYTICAL SKILLS IN STEM EDUCATION.....2083***

Ying Xie (Kennesaw State University, USA)
Kai Qian (Kennesaw State University, USA)
Jing (Selena) He (Kennesaw State University, USA)

STUDENTS ENVISIONING THE FUTURE.....2088

Thomas Lind (Uppsala University, Sweden)
Åsa Cajander (Uppsala University, Sweden)
Bengt Sandblad (Uppsala University, Sweden)
Mats Daniels (Uppsala University, Sweden)
Marta Lárusdóttir (Reykjavik University, Iceland)
Roger McDermott (The Robert Gordon University, United Kingdom)
Tony Clear (Auckland University of Technology, New Zealand)

***A CONCEPT MAP-BASED COGNITIVE FRAMEWORK FOR ACQUIRING EXPERT KNOWLEDGE IN
INDUSTRIAL ENVIRONMENT.....2097***

Yuetong Lin (Indiana State University, USA)
A. Mehran Shahhosseini (Indiana State University, USA)
M. Affan Badar (Indiana State University, USA)
Tad Foster (Indiana State University, USA)
Jason Dean (Indiana State University, USA)

S4A: Leadership

Chair: Andrew Danowitz (California Polytechnic State University San Luis Obispo, USA)

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Room: 170A

CORRELATION BETWEEN ENGINEERING STUDENT LEADERSHIP PRACTICES, PERSONALITY TYPES, AND DEMOGRAPHIC CHARACTERISTICS.....2102

Benjamin Ahn (Iowa State University, USA)

John G. Brisson (Massachusetts Institute of Technology, USA)

A METHODOLOGICAL EVALUATION OF AN INTEGRATIVE PEDAGOGY FOR ENGINEERING EDUCATION.....2107

Cecilia Moloney (Memorial University of Newfoundland, Canada)

Janna Rosales (Memorial University of Newfoundland, Canada)

Cecile Badenhorst (Memorial University of Newfoundland, Canada)

S4B: Group and Team Work

Chair: Marc Sosnick-Pérez (San Francisco State University, USA)

3:30 PM – 5:00 PM

Room: 170B

CAPSTONE: A CLOUD-BASED PLATFORM FOR MULTI-PARTY COLLABORATION ON CAPSTONE PROJECTS.....2113

Xiaocong Fan (Pennsylvania State University, USA)

USING FRAME-OF-REFERENCE TRAINING TO IMPROVE THE DISPERSION OF PEER RATINGS IN TEAMS.....2122

Daniel M. Ferguson (Purdue University, USA)

Chad Lally (Purdue University, USA)

Hilda Ibriga Somnooma (Purdue University, USA)

Olivia Murch (Purdue University, USA)

Matthew W. Ohland (Purdue University, USA)

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Charles Walter (University of Tulsa, USA)

Ian Riley (University of Tulsa, USA)

Rose Gamble (University of Tulsa, USA)

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Sergio A. A. Freitas (University of Brasilia, Brazil)

Rita C. Silva (University of Brasilia, Brazil)

Edna D. Canedo (University of Brasilia, Brazil)

Tiago Franklin R. Lucena (Centro Universitário de Maringa, Brazil)

S4C: Identity, Learning and Persistence

Chair: Henriette Burns (Washington State University, USA)

3:30 PM – 5:00 PM

Room: 130B

HOW SALIENT IS THE IDENTITY OF ENGINEERING STUDENTS?

ON THE USE OF THE ENGINEERING STUDENT IDENTITY SURVEY.....2142

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Nicholas A. Curtis (James Madison University, USA)

Robin D. Anderson (James Madison University, USA)

***UNDERSTANDING INTERSECTING SOCIAL IDENTITIES IN
ENGINEERING EDUCATION AND PRACTICE.....2148***

Javier A. Kypuros (University of Texas, USA)

Michelle Bothwell (Oregon State University, USA)

Charles S. Sasaki (Windward Community College, USA)

Jessica Lavariega Monforti (Pace University, USA)

Kelli Y. Nakamura (Kapi'olani Community College, USA)

Dwayne Plaza (Oregon State University, USA)

***A DEGREE IS NOT ENOUGH: PROMOTING ENGINEERING IDENTITY DEVELOPMENT AND
PROFESSIONAL PLANNING THROUGH THE TEACHING
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Catherine G.P. Berdanier (The Pennsylvania State University, USA)

Mary McCall (Purdue University, USA)

Gracemarie Mike (Rowan University, USA)

***MOTIVATION AND IDENTITY IN C++; THE EFFECTS OF MUSIC IN
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Courtney S. Smith-Orr (UNC Charlotte, USA)

Andrew Garnett (UNC Charlotte, USA)

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Kurt A. Thoroughman (Washington University in St. Louis, USA)

Joseph A. O'Sullivan (Washington University in St. Louis, USA)

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Chair: Renata A. Revelo (University of Illinois at Chicago, USA)

3:30 PM – 5:00 PM

Room: 130C

ACTUALIZING STUDENTS' PRIOR KNOWLEDGE IN ENGINEERING EDUCATION.....2166

Qaiser Malik (National University of Sciences and Technology, Pakistan)

Naveed Zafar (National University of Sciences and Technology, Pakistan)

Mohammad Javed Khan (Tuskegee University, USA)

***A CRITICAL ANALYSIS OF TRENDS IN STUDENT-CENTRIC ENGINEERING EDUCATION
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Aletta Nylén (Uppsala University, Sweden)

Mats Daniels (Uppsala University, Sweden)

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Vimal Viswanathan (Tuskegee University, USA)
John Solomon (Tuskegee University, USA)

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Senay Purzer (Purdue University, USA)
Nicholas D. Fila (Purdue University, USA)

A FRAMEWORK FOR WRITING LEARNING AGREEMENTS.....2190

Tony Clear (Auckland University of Technology, New Zealand)
Roger McDermott (Robert Gordon University, United Kingdom)
Elin Parsjö (Uppsala University, Sweden)
Åsa Cajander (Uppsala University, Sweden)
Mats Daniels (Uppsala University, Sweden)
Nanna Lagerqvist (Uppsala University, Sweden)

S4E: PK-12: Pathways to Careers

Chair: Henry Griffith (Michigan State University, USA)

3:30 PM – 5:00 PM

Room: 140A

INFORMAL STEM CAMP INFLUENCES ON ENGINEERING CONFIDENCE.....N/A

Ali Bicer (Texas A&M University, USA)
Sandra B. Nite (Texas A&M University, USA)
Robert M. Capraro (Texas A&M University, USA)
Luciana R. Barroso (Texas A&M University, USA)
Mary M. Capraro (Texas A&M University, USA)
Jeffrey E. Froyd (Texas A&M University, USA)

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Jennifer Cross (Carnegie Mellon University, USA)
Emily Hamner (Carnegie Mellon University, USA)
Lauren Zito (Carnegie Mellon University, USA)
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ENHANCING CONTINUITY BETWEEN GENDER DIVERSITY INTERVENTIONS USING HYBRID SOCIAL NETWORKS.....2207

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Faezeh Hajiaghajani (Michigan State University, USA)
Angela Griffith (Wright State University, USA)

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Cheryl Carrico (Virginia Polytechnic Institute and State University, USA)
Homero Murzi (Virginia Polytechnic Institute and State University, USA)
Holly Matusovich (Virginia Polytechnic Institute and State University, USA)

A SYNCHRONOUS DISTANCE EDUCATION HYBRID MODEL OF COLLEGE-LEVEL CREDITS FOR HIGH-SCHOOL STUDENTS.....2218

Manuel Jimenez (Univ. of Puerto Rico at Mayagüez, Puerto Rico)
Sonia Bartolomei (Univ. of Puerto Rico at Mayagüez, Puerto Rico)
Ysela Ochoa (Univ. of Puerto Rico at Mayagüez, Puerto Rico)
Wilma Santiago (Univ. of Puerto Rico at Mayagüez, Puerto Rico)

S4F: Evaluating Computer Programming

Chair: Nannan He (Minnesota State University at Mankato, USA)

3:30 PM – 5:00 PM

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***SIMPLE FEEDBACK CAN DO THE JOB: ANALYZING THE EFFECTS OF SIMPLE
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Matthias Laengrich (University of Applied Sciences Zittau / Goerlitz, Germany)

***QUALITATIVE ASPECTS OF STUDENTS' PROGRAMS:
CAN WE MAKE THEM MEASURABLE?.....2228***

Eliane Araujo (Federal University of Campina Grande, Brazil)

Dalton Serey (Federal University of Campina Grande, Brazil)

Jorge Figueiredo (Federal University of Campina Grande, Brazil)

TYPES OF ASSESSING STUDENT-PROGRAMMING KNOWLEDGE.....2236

Anabela Gomes (University of Coimbra, Portugal)

Fernanda Brito Correia (University of Aveiro, Portugal)

Pedro Henriques Abreu (University of Coimbra, Portugal)

APPLYING SPECTRUM-BASED FAULT LOCALIZATION ON NOVICE'S PROGRAMS.....2244

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