



Meet these dummies at the
6th IAJC International Conference

Conference Program



Engineering, Women in Science,
Construction and Sustainable Technologies



The International Conference on
Engineering & Technology
October 11-14, 2018
Orlando, Florida

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Embassy Suites Hotel Map	(back cover)

IAJC Conference Registration Desk Hours

Thursday 3:00—7:00pm
Friday 8:30—11:30am / 2:30—6:00pm
Saturday 8:00—10:00am

The Embassy Suites hotel offers FREE breakfast (buffet), FREE Internet, FREE parking, and FREE daily receptions with open bar and snacks. Shuttle service is available to area shopping and all Central Florida attractions.



A Message from the IAJC President



Dear Conference Participants:

As IAJC President, I would like to welcome you to the 6th IAJC International Conference on engineering and related technologies. The conference theme, **Engineering, Women in Science, Construction and Sustainable Technologies**, reflects a significant need for attracting the right people with “the right stuff” into today’s most important engineering fields. These people, armed with the right technology will provide the foundation for the creation of a better future for the next generation of students, faculty, and researchers, who will then lead the world in the tight, competitive global markets of the 21st century. The IAJC Conference Executive and Advisory Boards, comprised of well-known individuals from over 50 of the top universities from around the globe, have made every effort to present this high-quality conference and to ensure that your time spent with us is both rewarding and productive. If you have questions about the conference or need assistance, please feel free to contact me, the conference general chair, or any board member.

The famed city of Orlando, with its rich and varied history, offers an excellent conference venue. It is the top vacation destination in the world, providing many fun activities for all ages. Best wishes for a pleasant stay and for a productive and successful conference. Thank you for joining us.

Sincerely,

Mark Rajai, Ph.D.

IAJC President

California State University-Northridge

Phone: 818-677-5003

Email: mark.rajai@csun.edu

Message from the IAJC Conference General Chair



As we in higher education and industry reflect back on the first decade in this new millennium, we realize that the sharing of ideas and resources is an effective way for us to create a better future for the next generation of students, faculty, and researchers. In the competitive and tight global markets of the 21st century, leading companies across industry have embarked on massive reorganizations, mergers, partnerships, and varied collaborative projects, not only with their like-minded peers, but also with their rivals, in order not only to survive, but to grow and thrive. As industry changes with time, so must academia. Conversely, as academic R&D efforts provide advancements in technology, so must industry provide a quick turnaround from concept to market. However, many academic organizations, journals, and conferences have been slow to adapt, and, thus, to provide the necessary platforms for the dissemination of knowledge.

Beginning in 2004, the editorial board of the International Association of Journals and Conferences (IAJC) embarked on unprecedented efforts to establish groundbreaking strategic partnerships with other major rival journals and organizations in order to share resources. This approach offers authors a unique opportunity to attend one conference, yet have the ability to publish their paper(s) in several high-impact journals representing interests as diverse as those of the researchers and educators in fields related to engineering, engineering technology, industrial technology, mathematics, science, and education. These efforts resulted in an innovative model for international conferences that include a variety of journals and organizations. IAJC joint and independent international conferences have been a great success, with the main conferences being held in the United States, while simultaneous regional conferences are held in other parts of the world. In addition to attracting top authors to its conference venues, IAJC attracts myriad journals that wish to publish the best of what its conference attendees have to offer, thereby creating excitement in academic communities around the

world. IAJC is a first-of-its-kind, pioneering organization. It is a prestigious, global, multilayered umbrella consortium of academic journals, conferences, organizations, and individuals committed to advancing excellence in all aspects of technology-related education.

Conference Statistics:

The submissions for this conference included 126 abstracts from 121 educational institutions and companies worldwide—Brazil, Germany, Korea, Morocco, Egypt, Algeria, and Iran—(multiple submissions from the same authors were not counted). After a multi-level review process, only 61 full papers and 54 abstracts were accepted for presentation at the conference and for publication in the conference proceedings. Organizing such broad conferences is a monumental task and could not be accomplished without the help and support of the conference committee, the division/session chairs, and the reviewers. Thus, I offer my sincerest thanks to all for their hard work and dedication in the development of this outstanding 2018 conference program. I personally hope you will seek them out to thank them for their fine work. As we continue to offer, and to strive to improve upon, these high-quality and unique conferences, we are seeking dedicated individuals to join us on the planning committee for the next conference—scheduled for fall, 2020. Please watch for updates on our website (www.IAJC.org) and contact us anytime with comments, concerns, or suggestions. On behalf of the 2018 IAJC conference committee and IAJC Board of Directors, we thank you for participating in this great conference, and we hope to see you next time.

Sincerely,

Philip D. Weinsier
IAJC Conference General Chair

Conference Executive Board Members

Conference General Chair

Philip D. Weinsier

Bowling Green State University-Firelands

Phone: 419.372.0628

Email: philipw@bgsu.edu

IAJC President and Conference Co-Chair

Mark Rajai

California State University-Northridge

Phone: 818.677.5003

Email: mrjai@csun.edu

Engineering Division

Chris Kluse (Co-Chair)

Bowling Green State University

Ravindra Thamma (Co-Chair)

Central Connecticut State University

Paul Akangah (Co-Chair—Mechanical)

North Carolina A&T State University

Rami Haddad (Chair—Electrical)

Georgia Southern University

Mohammed Abdallah (Co-Chair—Electrical)

State University of New York

Andy Chae (Chair—Civil)

Central Connecticut State University

Namhun Lee (Chair—Construction)

Central Connecticut State University

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North Carolina A&T State University

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- International Association of Journals & Conferences (IAJC)
- The Institute of Electrical and Electronics Engineers (IEEE)
- American Society for Engineering Education (ASEE)
- Lean Institute

Journal Sponsors

- International Journal of Modern Engineering (official and flagship journal of IAJC)
- International Journal of Engineering Research and Innovation (official journal of IAJC)
- Technology Interface International Journal (official journal of IAJC)

University Sponsors

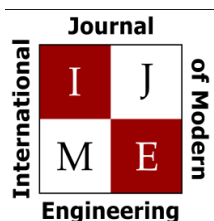
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- Sam Houston State University
- Western Illinois State University
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- Southwestern Oklahoma State University
- University of New Mexico
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Invited Presentations

Presentation #1: *Crash Test Dummies (Humanetics)*

Friday, October 12, 2:00pm – 3:45pm
[Seminole Room]



Michael "Mike" Beebe is currently the Chief Technical Officer for Humanetics Innovative Solutions, the maker of all crash test dummies for the world, and faculty member of North Central State College, teaching Mechanical Engineering. Mr. Beebe has over 40 years' experience working as an engineer and holds over a dozen patents for crash test dummies.

This presentation will focus on the processes of development, design, construction, testing, biofidelity, rating systems, and using a crash dummy in vehicle evaluations. This will include how the regulations are put together, material issues for the dummy and how the dummy is set in a vehicle prior to testing. All of the different types of anthropomorphic test devices (ATDs) that are made for the many different applications, automotive, military, and other types of vehicle testing will also be discussed.

Presented by Mike Beebe, Humanetics Innovative Solutions
(mbeebe@humaneticsatd.com; 567-265-5200)

Presentation #2: *Effectiveness of Carbon Nanotube Dispersion in Smart Cementitious Materials*

Friday, October 12, 4:00pm – 4:20pm
[Palm Room]



Cementitious materials have been commonly utilized as one of the main construction materials for concrete and asphalt in heavy highway, bridge, and building constructions. Concentrated loads could cause concrete or asphalt cracking and delamination, which could be hard to detect and have long-term impacts on structure performance. Current methods for detecting distresses in cementitious materials mainly depended on occasional visual inspections and non-destructive detection techniques such as acoustic, ultrasonic, X-ray, and eddy current inspection, which are not in real time and demand significant effort. Therefore, smart cementitious materials, with the ability to monitor their own health, have become very attractive worldwide. Carbon nanotubes with piezo-resistive effects represent a promising solution that can be applied in civil engineering fields to measure strain and stress changes on structures. In this presentation, a novel co-polymer dispersion method is introduced to effectively disperse graphene nano in smart cementitious materials. Laboratory experiments showed that the method can significantly improve the sensing capability, stability, and consistency of CNTs in smart cementitious materials.

Dr. Ying Huang is an associate professor in the Department of Civil and Environmental Engineering at North Dakota State University. Her research background includes steel corrosion protection and mitigation, smart cities and autonomous systems, smart materials and structural health monitoring, intelligent transportation systems, pavement and traffic monitoring, railroad damage and defect assessment, big data for civil engineering application, and emergency evacuation for multi-hazards. Dr. Huang has obtained over \$2 million in research grants from numerous agencies including NSF, U.S. DOT, NASA. She also holds two U.S. approved and pending patents, has over 70 peer-reviewed publications including a book chapter, 30 journal articles, and 40 conference papers, all of which have been cited 414 times with an i10-index of 11. She has over 12 invited presentations and 25 international and national presentations.

Presented by Ying Huang, North Dakota State University
(ying.huang@ndsu.edu; 701-231-7651)

Panel Presentations

Presentation #1: *Inserting Soft Science into Hard Science Engineering Curricula*

**Friday, October 12, 10:30am – 12:30pm
[Palm Room]**



Evidence from the domains of behavioral economics, behavioral operations management, and behavior centered design suggests that students in the hard sciences, particularly engineering, would benefit from instruction in the social, or soft, sciences. However, it is not clear how deeply skills from the soft sciences (often referred to as soft skills) are incorporated into engineering curricula. Further, pressure to keep up with rapidly changing technology makes adding interdisciplinary material more difficult. Evidence describing the utility of developing soft skills in engineering students will be presented along with a discussion of the reality of making it happen in already demanding engineering curricula.

- How soft science informs engineering curricula at their institutions.
- The value soft skills have for engineering students.
- Experiences as an educator with students who have soft skills.
- Experiences in industry about the value of soft skills.
- The importance of soft skills to co-op partners.
- Materials and techniques used to develop soft skills in students.
- Lessons learned.

*Presented by Michelle Brodke, Bowling Green State University
Firelands (mbrodke@bgsu.edu; 419-372-0699)*

Presentation #2: *Strengthening Stem Identities Through Out-of-Classroom Learning Experiences*

**Friday, October 12, 4:00pm – 6:00pm
[Volusia Ballroom]**



The STEM workforce plays a key role in the economic vitality of any nation by driving innovation and competitive advantage. However, the percentage of STEM workers and professionals in the U.S. workforce remains low, only 6.1% as reported by the U.S. Department of Commerce. A critical challenge to STEM educators is maintaining students' interest in STEM careers to ensure their smooth transitions into the STEM workforce. Recent research suggests that the formation and growth of students' STEM identities could be critical in strengthening their STEM identities and pathways into the STEM workforce. Students with strong STEM identities are more likely to persist and be successful in STEM careers. While the role of out-of-classroom experiences in enhancing STEM identities has received some attention, more in-depth discussions, research, and collaborations are necessary to enhance the impact of out-of-classroom experiences on students' STEM identity formation.

The primary purpose of this panel discussion is to examine the impact of successful physical and virtual out-of-classroom learning experiences on undergraduate student STEM identities. Discussions will include funding, best practices, lessons, obstacles, and improvements that can serve as models that can be replicated by other institutions and STEM educators. The perceptions and experiences of panelists will provide additional insights to support collaboration and future STEM identity research work. At the end of this session, STEM educators will have up-to-date information and insights on physical and virtual out-of-school experiences that have the potential to maximize the STEM identity formation. Also, best practices can be modeled by other STEM educators and institutions. Lastly, a network of interested STEM education researchers would be formed to collaborate and share ideas for a proposal to support STEM education.

*Presented by Andrea Ofori-Boadu, North Carolina A&T State
University (andrea@ncat.edu; 336-285-3128)*

Meals, Breaks, Receptions

October 11-14: Embassy Suites guests only

- 7:00 — 8:30am
Free cooked-to-order breakfast buffets
- 5:30 — 7:00pm
Free receptions with open bar / snacks

All Conference Attendees:

Friday, October 12

- 10:15 — 10:30am
Refreshment break
- 12:30 — 2:00pm
Luncheon / Keynote Speaker
- 3:45 — 4:00pm
Refreshment break
- 7:00 — 8:30pm
Dinner Banquet / Awards Ceremony

Saturday, October 13

- 10:15 — 10:30am
Refreshment break
- 12:30 — 2:00pm
Lunch

Session Legend

ENG Engineering

EDU Higher Education

MFG Manufacturing

ITC Information Technology, Business,
Entrepreneurship, and Computer Science

Daily Schedule — Friday

Friday, October 12, 2018

8:30—10:15am Buena Vista

ENG 101: Robotics I

Session Chairs:

Lili Tabrezi (California State University)

Shonda Bernadin (FAMU-FSU)

Abstract #083

Robotic Hand Control Using Artificial Neural Networks and EMG Signals From the Forearm

Rocio Alba-Flores, Georgia Southern University

Abstract #001

Implementation of Robotic Vision into the Simulation Environment

Alex Sergeyev, Michigan Technological University;

Scott Kuhl, Michigan Technological University;

Vincent Druschke, Michigan Technological University;

Joshua Hooker, Michigan Technological University

Paper #120

Stability and Transparency in Bilateral Teleoperation via Continuous Pole Placement

Theo Okore-Hanson, North Carolina A&T State University;

Sun Yi, North Carolina A&T State University;

Sameer Hamoush, North Carolina A&T State University;

Younho Seong, North Carolina A&T State University

Abstract #052

Collaborative Robot Teleoperation Using Virtual Reality

Haoyu Wang, Central Connecticut State University;

Biao Zhang, ABB Robotics Corp.

Daily Schedule — Friday

8:30—10:15am Seminole

EDU 201: STEM and Women in Science

Session Chairs:

Marilyn Dyrud (Oregon Institute of Technology)

Emily Crawford (Claflin University)

Abstract #049

Recruitment of Women and Minorities into Mechanical Engineering Technology Programs

Mohan Devgun, SUNY Buffalo State;

David Kukulka, SUNY Buffalo State

Abstract #085

Broadening Participation of Female Students in Engineering and Engineering Technology through the Partnership with the Girl Scouts

Vukica Jovanovic, Old Dominion University;

Otilia Popescu, Old Dominion University;

Carol Considine, Old Dominion University;

Amy Kitts, Old Dominion University;

Stephanie Adams, Old Dominion University

Paper #091

Improving STEM Recruitment through a Theme Based Summer Residential Camp Focused on a Sea Level Rise

Vukica Jovanovic, Old Dominion University;

Cynthia Tomovic, Old Dominion University;

Balsa Terzic, Old Dominion University;

Mujde Erten-Unal, Old Dominion University;

George McLeod, Old Dominion University;

Alison Stinley, Old Dominion University

Abstract #035

Development of an Algorithm to Discern Optimum STEM Education Paths by Leveraging Big Data and Predominant Learning Styles of Affected Learners

Wes Conwell, University of Alabama at Birmingham

Abstract #123

Learning Experiences of Minority Middle-School Girls During ART-Infused Research Experiences in Bio-Modified Cement Pastes: A Grounded Theory Approach

Andrea Ofori-Boadu, North Carolina A&T State University;

Kayla Gore, North Carolina A&T State University;

Dongyang Deng, North Carolina A&T State University;

Cheryl Stevens, North Carolina A&T State University

Daily Schedule — Friday

8:30—10:15am Palm

MFG 301: Topics in Manufacturing I

Session Chairs:

Paul Akangah (North Carolina A&T State University)

Austin Cheney (Eastern Illinois University)

Iraj Mamaghani (University of North Dakota)

Abstract #047

Variations in Mechanical Properties of Cold-Rolled Steels

Krishna Devabattini, Texas A&M University Kingsville

Abstract #010

Method Modification for Replacement of Combination Stand Horizontal Spindles in MMSM to Improve Productivity

Ganga Venkata Vallamareddy, Texas A&M University Kingsville;

Manoj Kumar Malepati, Texas A&M University Kingsville

Abstract #011

Scratch Behavior of Multilayer Polymeric Films

Ganga Venkata Vallamareddy, Texas A&M University Kingsville;

Manoj Kumar Malepati, Texas A&M University Kingsville

Paper #020

Stir Welding Aluminum Plates Using a Low-Cost Milling Machine

Sudershan Jetley, Bowling Green State University;

Rama Krishna Pinnoju, Bowling Green State University

Abstract #008

Evaluation of Fracture Parameters of ASTM Fracture Specimens Using FEA

Manoj Kumar Malepati, Texas A&M University Kingsville

Daily Schedule — Friday

8:30—10:15am Volusia

ITC 401: Physical Security

Session Chairs:

Toqeer Israr (Eastern Illinois University)

Chris Kluse (Bowling Green State University)

Abstract #070

Evaluating Security Processing and Staffing Requirement: Large Event Security and Threat Reduction

Anthony Hustedt, Purdue University;

Nicolas Villacis, Purdue University;

Eric Dietz, Purdue University

Abstract #069

Technical Review and Optimization of Walk-Through Metal Detector Processes

Anthony Hustedt, Purdue University;

Colby Craig, Purdue University;

Eric Dietz, Purdue University

Abstract #053

Assessing Security Perimeters for Large Events Using Agent-based modeling

Alissa Gilbert, Purdue University;

Austin Riegsecker, Purdue University;

Eric Dietz, Purdue University

Paper #065

Analyzing Response Communication Mitigation Methods through Simulation Modeling

Katherine Reichart, Purdue University;

Anna Larson, Purdue University;

Kristal Smith, Purdue University;

Eric Dietz, Purdue University

Paper #105

Synchronous vs Asynchronous Costs

Colby Craig, Purdue University;

Siddharth Chowdury, Purdue University;

Eric Dietz, Purdue University

10:15—10:30am

Refreshment Break

Daily Schedule — Friday

10:30—12:30pm Buena Vista

ENG 102: Robotics II

Session Chairs:

Ibrahim Abdel-Motaleb (Northern Illinois University)

Ahmed Elsayy (Tennessee Technological University)

Abstract #081

Prosthetic Arm Project

Sean Abrams, Old Dominion University;

Jeffery Larson, Old Dominion University;

Kyle Gibson, Old Dominion University;

Arrie Tyrus, Old Dominion University;

Jeffery Nice, Old Dominion University;

Vukica Jovanovic, Old Dominion University

Abstract #122

Development of ROS-Based Teleoperation Control of Robot for Non-Destructive-Testing of Nuclear structures

Theo Okore-Hanson, North Carolina A&T State University;

Sun Yi, North Carolina A&T State University;

Sameer Hamoush, North Carolina A&T State University;

Younho Seong, North Carolina A&T State University;

Sajjad Roudsari, North Carolina A&T State University

Abstract #094

Brain-Machine Interfacing for Remote Robot Control Using an Electroencephalogram-Based System

Jin Zhu, University of Northern Iowa

Abstract #077

Robotic Hand Control Using Facial Gestures and Artificial Neural Networks

Rocio Alba-Flores, Georgia Southern University

Daily Schedule — Friday

10:30—12:30pm Seminole

EDU 202: Research and Design Projects in Education

Session Chairs:

Saeed Foroudastan (Middle Tennessee State Univ.)

Rami Haddad (Georgia Southern University)

Faruk Yildiz (Sam Houston State University)

Paper #055

Assessment of an Integrated Engineering General Education/Senior Project Course

Patricia Backer, San Jose State University;

Laura Sullivan-Green, San Jose State University;

David Parent, San Jose State University

Paper #121

A Multi-Semester Project Linking Programming, Digital Design, and Microcomputer Courses

Dave Broderick, Central Connecticut State University;

Adrian Felczak, Central Connecticut State University;

Alexander Phillips, Central Connecticut State University

Abstract #098

Design and Simulation of a Mobile Robot as an Undergraduate Research Project

Ali Eydgahi, Eastern Michigan University

Abstract #097

Development of Unmanned Copters as an Undergraduate Research and Design Project

Ali Eydgahi, Eastern Michigan University

Abstract #102

Database System Used to Manage Prospective Graduate Admission Application Processes

Sam Khoury, Spring Hill College;

Kouroush Jenab, Morehead State University

10:30—12:30pm Palm

Panel Presentation #1:

Inserting Soft Science into Hard Science Engineering Curricula

Presented by Michelle Brodke

Bowling Green State University Firelands

Session Chair:

Tarek Mahfouz (Ball State University)

Daily Schedule — Friday

10:30—12:30pm Volusia

ITC 402: Wireless Mobile Applications

Session Chairs:

Samir Akhrouf (Mohamed El Bachir El Ibrahimi University, ALGERIA)

Ulan Dakeev (Texas A&M University Kingsville)

Abstract #061

Knowledge Base Analyzer

Toqeer Israr, Eastern Illinois University;

Zeeshan Saleem, Eastern Illinois University

Paper #109

Novel Use of Remote Sensing, Monitoring, and Tracking for Animals in Wild Habitats

Ben Zoghi, Texas A&M University;

Rainer Fink, Texas A&M University

Paper #018

Virtual Lateral Vehicular Variation: Towards Subjective Mental Workload Measurements

Sylvia Bhattacharya, FAMU-FSU;

Shonda Bernadin, Florida State University

Paper #073

Mobile Multi-Camera Triangulation Via Wireless Network to Estimate Footage of Moving Objects

Sangho Park, Central Connecticut State University;

Xiaobing Hou, Central Connecticut State University

Paper #019

A Variable-Speed Turntable for Accelerometer Performance Testing

Dale Litwhiler, Penn State Berks

12:30—2:00pm

Luncheon and Keynote Presentation

[Mike Beebe, Humanetics Innovative Solutions]



Daily Schedule — Friday

2:00—3:45pm Buena Vista

ENG 103: Automotive Engineering

Session Chairs:

Alex Sergeyev (Michigan Technological University)

Mebougna Drabo (Alabama A&M University)

Paper #071

The MULE and Industrial Autonomous Shadowing Intelligent Vehicle

Fernando Rios, Georgia Southern University;

Cassandra Summer, Georgia Southern University;

Cassidy Cordell, Georgia Southern University;

Makhlul Hossain Prio, Georgia Southern University

Paper #079

Mini Remote Operated Vehicle

Jeffery Larson, Old Dominion University;

Fred Summs, Old Dominion University;

Michael Travis, Old Dominion University;

Vukica Jovanovic, Old Dominion University

Paper #107

Optimal Design of an Automotive Rear Axle Housing

Yaomin Dong, Kettering University

Abstract #009

Design and Analysis of Off Road Vehicle

Manoj Kumar Malepati, Texas A&M University

Kingsville

Paper #078

Intelligent Vehicle for Hospital, Clinic and Patient Care Environments

Fernando Rios, Georgia Southern University;

Rocio Alba-Flores, Georgia Southern University;

Makhlul Hossain Prio, Georgia Southern University

2:00—3:45pm Seminole



Invited Presentation #1: Crash Test Dummies



*Presented by Mike Beebe
Humanetics Innovative Solutions*

Session Chair:

Matt Pleil (University of New Mexico)

Daily Schedule — Friday

2:00—3:45pm Palm

MFG 302: Topics in Manufacturing II

Session Chairs:

Sudershan Jetley (Bowling Green State University)

Marilyn Dyrud (Oregon Institute of Technology)

Abstract #029

Implementing Lean in Higher Education: Is it Different?

Zaki Kuruppalil, Ohio University

Paper #030

An Automated Hydraulic Position Control System—Structure and Performance Analysis

Yuqiu You, Ohio University;

Jesus Pagan, Ohio University

Paper #118

Production Optimization of a Ramp-Up Abrasive Disk Manufacturing System Using Discrete- Event Simulation

Ali Alavizadeh, Purdue University Northwest;

Lash Mapa, Purdue University Northwest

Paper #124

Plotting Target Value Deviation from Machine Vision Part Inspection Data Using RStudio and MySQL for Small Scale SQL Databases

Joe Petruzzi, Central Connecticut State University;

Jason Child, Central Connecticut State University;

Ravi Thamma, Central Connecticut State University

Abstract #125

Nominal Target Response Optimization of a Milling Operation

Daniel Kirby, Central Connecticut State University;

Ravi Thamma, Central Connecticut State University

Paper #129

Statistical Analysis of Turning Parameters and Vibrations on Surface Roughness

Paul Rinaldi, Central Connecticut State University;

Ravi Thamma, Central Connecticut State University;

Mark Rajai, California State University Northridge

Daily Schedule — Friday

2:00—3:45pm Volusia

ITC 403: 3D Printing and CAD

Session Chairs:

Rami Haddad (Georgia Southern University)

Ali Eydgahi (Eastern Michigan University)

Lev Levitin (Boston University)

Paper #110

An Open Source Inexpensive Large-Scale Polar Configuration 3D Printer

Sourabh Prashant, Michigan Technological University;

Sid Shah, Michigan Technological University;

Shrinivas Kulkarni, Michigan Technological University;

John Irwin, Michigan Technological University

Paper #004

Experimental Design Analysis of 3D Printing Processes to the Strength of Material

Shaobiao Cai, Minnesota State University;

Sairam Vangapally, Minnesota State University;

Yongli Zhao, St. Cloud State University

Abstract #074

The Use of Woodworking Magazines as a Source of 3D CAD Projects

Joel Lenoir, Western Kentucky University;

Jessica Lenoir, Western Kentucky University

Paper #115

3D Food Printing Insights and Opportunities: A Capstone Design Case Study

Joe Piacenza, University of West Florida;

Hope Weiss, California State University Fullerton;

Monika Patel, California State University Fullerton;

Sean Moore, California State University Fullerton;

Tam Nguyen, California State University Fullerton;

Nikolia Shields, University of West Florida

Paper #064

Dream, Validate, Execute: An Innovation Venture between Academia and Industry

Rafael Obregon, Western Illinois University

3:45—4:00pm

Refreshment Break

Daily Schedule — Friday

4:00—6:00pm Buena Vista

ENG 104: Novel Engineering Applications

Session Chairs:

Ahmed Elsayy (Tennessee Tech University)

Zaki Kuruppallil (Ohio University)

Paper #060

Chatbot - An Alternate to Human Interaction

Toqeer Israr, Eastern Illinois University;

Ajay Aakula, Eastern Illinois University

Abstract #027

Nonlinearity of Enhanced Cell Structures Having Auxetic Material Properties

Chulho Yang, Oklahoma State University;

Dongchang Lee, CTO, FR Technology, KOREA;

Young Chang, Oklahoma State University

Paper #112

Design and Analysis of Au and ITO THz Antennas

Sai Dittakavi, Northern Illinois University;

Ibrahim Abdel-Motaleb, Northern Illinois University

Paper #113

Design and Analysis of Blast Wave Sensors

Jason Kluga, Northern Illinois University;

Ibrahim Abdel-Motaleb, Northern Illinois University

Paper #015

Improving Reliability of GOI and GCI Detection in Female Singers

Shonda Bernadin, FAMU-FSU;

Richard Morris, Florida State University;

David Okerlund, Florida State University

4:00—6:00pm Seminole

EDU 203: Topics in Teaching I

Session Chairs:

Michelle Brodke (Bowling Green State University Firelands)

Ali Alavizadeh (Purdue University Northwest)

Paper #025

Competency-Based Education: Course Design & Delivery for an Online Engineering Technology Program

Chris Kluse, Bowling Green State University

Daily Schedule — Friday

Abstract #086

Microfabrication Process Course Using a Simple Pressure Sensor Design

Matt Pleil, University of New Mexico

Paper #101

Integrating Engineering, Management, and Informatics with a Unique Interdisciplinary Degree

Saeed Foroudastan, Middle Tennessee State University

Paper #068

LON-CAPA: Finally, a Course Management System Suited for Engineering and Technology

Gene Harding, Purdue University

Abstract #084

Augmented Reality Mobile Learning Approach of the Lifecycle Development of Insects in Primary School Education

Cholpon Omuralieva, Texas A&M University Kingsville;

Ulan Dakeev, Texas A&M University Kingsville

4:00—6:00pm Palm

MFG 303: Topics in Construction I

Session Chairs:

Ali Eydgahi (Eastern Michigan University)

Bob LeMaster (University of Tennessee Martin)

Invited Presentation #2 (Paper #108):

Effectiveness of Carbon Nanotube Dispersion in Smart Cementitious Materials

Ying Huang, North Dakota State University

Paper #057

Flexural Design of Concrete Beams with High-Strength Reinforcement

Shane Palmquist, Western Kentucky University;

Andrew Bell, Western Kentucky University;

Katy Bridges, Western Kentucky University

Abstract #022

Hydration Characteristics of Cement Blended with Swine-Manure Bio-Char as a Partial Cement Replacement Material

Andrea Ofori-Boadu, North Carolina A&T University;

Paul Akangah, North Carolina A&T University;

Christian Bock-Hyeng, North Carolina A&T University;

Elham Fini, North Carolina A&T University

Daily Schedule — Friday

Abstract #036

Examining the Effect of Curing Time on the Flexural Strength and Deflection Behavior of a Geosynthetic Cementitious Composite Mat

Austin Cheney, Eastern Illinois University;

James Proctor, Eastern Illinois University;

Isaac Slaven, Eastern Illinois University

4:00—6:00pm Volusia

Panel Presentation #2: Strengthening Stem Identities Through Out-of-Classroom Learning Experiences

Presented by

Andrea Ofori-Boadu, North Carolina A&T State University;

Dongyang Deng, North Carolina A&T State University;

Paul Akangah, North Carolina A&T State University;

Christian Bock-Hyeng, North Carolina A&T State University

Session Chair:
Marla Rogers (C Spire)

5:30—7:00pm

Hotel-Sponsored Reception [Embassy Suites guests only]



7:00—8:30pm

Dinner Banquet / Awards Ceremony



Daily Schedule — Saturday

Saturday, October 13, 2018

8:30—10:15am Buena Vista

ENG 105: Topics in Medical Engineering

Session Chairs:

Mebougna Drabo (Alabama A&M University)

Paul Akangah (North Carolina A&T State University)

Abstract #012

Design and Simulation of Delta Parallel Mechanism for Cardiopulmonary Resuscitation

*Anirudhreddy Motati, Texas A&M University
Kingsville;*

*Manoj Kumar Malepati, Texas A&M University
Kingsville*

Paper #089

Identifying Individuals with Higher Incidence of Causing Medical Errors Within a Point of Distribution Site

*Patrick Glass, Purdue Homeland Security Institute
(Purdue University);*

Eric Dietz, Purdue University

Paper #039

A Small and Low-Cost Eye Tracking System for Amyotrophic Lateral Sclerosis Patients

Mohammed Abdallah, SUNY Poly;

Rabab Hassan, SUNY Poly;

Dustin Collins, SUNY Poly;

Pavel Olesh, SUNY Poly;

Derek Connelly, SUNY Poly

Paper #056

Performance Evaluation of a Portable Controller for Adjustable Pulmonary Artery Shunt

*Muhammad Hasan, Texas A&M International
University*

Abstract #046

Voice Controlled Home Automation Using Bluetooth

Krishna Devabattini, Texas A&M University Kingsville

Daily Schedule — Saturday

8:30—10:15am Seminole

EDU 204: Teaching—Informal Aspects of Learning

Session Chairs:

Wes Conwell (University of Alabama at Birmingham)

Sudershan Jetley (Bowling Green State University)

Paper #054

The Prevalence of Soft Skills in Engineering Curricula

Michelle Brodke, Bowling Green State University Firelands;

Carl Baum, Case Western Reserve University

Paper #059

How an Augmented Reality Tool May Benefit Spatial Cognition

Ulan Dakeev, Texas A&M University Kingsville;

Recayi Pecen, Sam Houston State University;

Faruk Yildiz, Sam Houston State University;

Farzin Heidari, Texas A&M University Kingsville;

Shah Alam, Texas A&M University Kingsville

Abstract #096

Exploration of Informal Learning Experiences for Strengthening Undergraduate Students' Construction Career Identities

Andrea Ofori-Boadu, North Carolina A&T State University;

Lewis Waller, Morgan State University;

Dorail Porter, North Carolina A&T State University

Abstract #087

Multiple Support Mechanisms for Adult and Veteran Students that Increase Academic Success in Engineering and Technology Education

Vukica Jovanovic, Old Dominion University;

Anthony Dean, Old Dominion University;

Rafael Landeata, Old Dominion University;

Cynthia Tomovic, Old Dominion University;

Kim Sibson, Old Dominion University

Daily Schedule — Saturday

8:30—10:15am Palm

MFG 304: Topics in Construction II

Session Chairs:

Yuqiu You (Ohio University)

Ying Huang (North Dakota State University)

Ali Alavizadeh (Purdue University Northwest)

Abstract #099

Utilization of Persian Geometric Patterns for Visual Performance of Responsive Façade

Negar Matin, Eastern Michigan University;

Ali Eydgahi, Eastern Michigan University

Paper #031

High-Rise Building Response Comparison: Use of Time Domain Scaling versus Spectral Matching Input Ground Motion

Towhid Bhuiyan, West Virginia State University

Paper #067

Seismic Design and Buckling Strength Evaluation of Liquid-Filled Steel Cylindrical Tanks

Wiriychai Roopkumdee, University of North Dakota;

Iraj Mamaghani, University of North Dakota

Paper #038

Zero Net Energy Buildings

Hossein Mirenayat, Texas Tech University;

Mukaddes Darwish, Texas Tech University

Abstract #043

Infrastructure Performance Measurement Using Utility Theory

Myungjin (Andy) Chae, Central Connecticut State University

Daily Schedule — Saturday

8:30—10:15am Volusia

ITC 404: Cybersecurity

Session Chairs:

Joel Lenoir (Western Kentucky University)

Samir Akhrouf (Mohamed El Bachir El Ibrahimi University, ALGERIA)

Paper #076

Cybersecurity Cost Resourcing and Requirements

Lareshia Poe, Purdue University;

Kristina Lister-Gruesbeck, Purdue University;

Eric Dietz, Purdue University

Paper #028

Countering Eavesdropping Attacks in Software-Defined Radio Networks Using a Moving-Target Defense

Isaac Cushman, Georgia Southern University;

Rami Haddad, Georgia Southern University;

Lei Chen, Georgia Southern University

Paper #080

Developing a Public/Private Cybersecurity Scorecard for the State of Indiana

James Lerums, Purdue University;

Eric Dietz, Purdue University

Paper #050

Analysis and Simulation of Networks with Virtual Cut-Through Routing

Lev Levitin, Boston University;

Yelena Rykalova, University of Massachusetts-Lowell

10:15—10:30am

Refreshment Break

Daily Schedule – Saturday

10:30—12:30pm Buena Vista

ENG 106: Wind and Solar Technologies

Session Chairs:

Kouroush Jenab (Morehead State University)

Ravi Thamma (Central Connecticut State University)

Paper #090

A Novel Curriculum Development in Solar and Wind Energy Systems in an Engineering Technology Program

Recayi Pecen, Sam Houston State University;

Faruk Yildiz, Sam Houston State University;

Kali M. Johnson, Sam Houston State University;

Andres Aguirre, Sam Houston State University;

Ulan Dakeev, Texas A&M State University Kingsville

Paper #014

Methodology to Evaluate the Environmental Impact of Wind Power Generation During the Planning Phase of the Facilities Projects

Mauricio Torres, Northern Kentucky University;

Cesar Sacco, Paula Souza Technological Education Center, BRAZIL

Abstract #037

Study and Investigation of the Hybridization of a Natural Composite Material for the Wind Turbine Blade Design Using FEM

Rabie Elalaoui, University Mohammed V Rabat, MOROCCO;

Mounir Hamid, University Mohammed V Rabat, MOROCCO;

Boudi Mostapha, University Mohammed V Rabat, MOROCCO;

Abdellatif Elmarjani, University Mohammed V Rabat, MOROCCO

Paper #072

A Comparative Study on the Thermal Efficiency of Solar Vacuum Tube vs Flat Plate Collectors for Water Heating Systems

Ahmed Elsayy, Tennessee Tech University;

Vishnu Samudrala, Tennessee Tech University;

Stephen Idem, Tennessee Tech University;

Mohan Rao, Tennessee Tech University

Paper #002

Hybrid, Semi-Passive Solar Harvesting System

Austin Etzel, Michigan Technological University;

Dustin Long, Michigan Technological University;

Joe Mayrose, Michigan Technological University;

Alex Sergeyev, Michigan Technological University

Daily Schedule — Saturday

10:30—12:30pm Seminole

EDU 205: Topics in Teaching II

Session Chairs:

Ben Zoghi (Texas A&M University)

Wes Conwell (University of Alabama—Birmingham)

Paper #082

Use a Smart Power Meter to Add Practical Labs in AC Electronics

Jack Li, Southwestern Oklahoma State University

Abstract #041

A Hands-on Approach to Teaching a Power Electronics Course Using Sim-Power Systems Toolbox

Adel El-Shahat, Georgia Southern University;

Rami Haddad, Georgia Southern University

Paper #034

The Role of Measurement System Analysis in Capstone Production

Mustafa Shraim, Ohio University;

Neil Littell, Ohio University;

Zaki Kuruppallil, Ohio University

Abstract #044

Enhancing Touch, Feel, and See Experiences in an Undergraduate Dynamics Course with Simple Experiments

Rungun Nathan, Penn State University Berks

Paper #114

Teaching Gear Design Using Specific Sliding Curves

Bob LeMaster, University of Tennessee Martin

Daily Schedule – Saturday

10:30–12:30pm Palm

MFG 305: Topics in Construction III

Session Chairs:

Emily Crawford (Claflin University)

Michelle Brodke (Bowling Green State University Firelands)

Paper #016

Assessment of Construction Disputes on a Worldwide Scale

Tarek Mahfouz, Ball State University;

James Jones, Ball State University;

Jennifer Warrner, Ball State University;

Sharif Attallah, Ball State University;

Ghada Gad, California State Polytechnic University Pomona

Abstract #017

A Cohousing Modular Approach Design In a Mixed-Use Residential Building for Under-Developed Sites

Alex Dekemper, Ball State University;

Tarek Mahfouz, Ball State University;

Joshua Coggeshall, Ball State University

Paper #066

Design and Cyclic Elastoplastic Analysis of Graded Thin-Walled Steel Tubular Columns with Enhanced Strength and Ductility

Qusay Alkaseasbeh, University of North Dakota;

Iraj Mamaghani, University of North Dakota

Abstract #117

Enhancing Students' Residential Construction Experiences and Interests through an NAHB Residential Construction Program

Kayla Gore, North Carolina A&T State University;

Dorail Porter, North Carolina A&T State University;

Robert Pyle, North Carolina A&T State University;

Andrea Ofori-Boadu, North Carolina A&T State University

Daily Schedule — Saturday

10:30—12:30pm Volusia

ITC 405: Topics in Project Management and Business

Session Chairs:

John Irwin (Michigan Technological University)

Rafael Obregon (Western Illinois University)

Abstract #051

Project Management: Skills, Experience, and Credentials for Career Development

Shirl Donaldson, University of Texas at Tyler

Paper #062

Recommendation System for Suggesting Suitable Content to the Users of SAHAVE

Toqeer Israr, Eastern Illinois University;

Ajay Aakula, Eastern Illinois University

Abstract #063

Breathing a New Life to Obsolete Computer Equipment

Toqeer Israr, Eastern Illinois University

Paper #024

Revising Manuscripts for Publication

Marilyn Dyrud, Oregon Institute of Technology

12:30—2:00pm

Lunch Break

Daily Schedule — Saturday

2:00—3:45pm Buena Vista

ENG 107: Thermodynamics, Fluids, and Gases

Session Chairs:

Chris Kluse (Bowling Green State University)

Ibrahim Abdel-Motaleb (Northern Illinois University)

Paper #026

Understanding the Factors that Promote Students' Success in Thermodynamics

Paul Akangah, North Carolina A&T State University;

Andrea Ofori-Boadu, North Carolina A&T State University;

Francis Davis, Kwame Nkrumah University of Science & Technology, GHANA;

Awele Anyanahun, Ford Motor Company

Abstract #005

Improving Academic Achievement in Fundamentals of Thermodynamics Using Socratic Dialogue Inducing (SDI) Laboratory

Paul Akangah, North Carolina A&T State University;

Julio Carvajal, North Carolina A&T State University;

Leotis Parrish, North Carolina A&T State University;

Awele Anyanahun, Ford Motor Company

Paper #021

Design and Test of a High-Speed Actuator for Gas Mixing and Flow Control Applications

Todd Batzel, Penn State Altoona;

Christopher Martin, Penn State Altoona;

Dimitris Kiaoulis, Penn State Altoona;

Matthew Cowler, Penn State Altoona

Paper #119

Computational Flow Visualization of a Rectangular Cylindrical Shell and Tube (Thermosiphon) Heat Exchanger with Baffles and Cross-Flow of Fluid in the Shell

Mebougna Drabo, Alabama A&M University;

He Tao, Stony Brook University;

Wei Zhong, Stony Brook University;

Jon Longtin, Stony Brook University;

Thomas Butcher, Brookhaven National Laboratory;

Narinder Tutu, Brookhaven National Laboratory;

Rebecca Trojanowski, Brookhaven National Laboratory

Daily Schedule – Saturday

2:00—3:45pm Seminole

ENG 108: Sustainable Engineering

Session Chairs:

Muhammad Hasan (Texas A&M International University)

Saeed Foroudastan (Middle Tennessee State University)

Abstract #100

Physiochemical Characterization of Swine Manure Towards More Sustainable Engineering Applications

Dongyang Deng, North Carolina A&T State University;

Andrea Ofori-Boadu, North Carolina A&T State University;

Elham Fini, North Carolina A&T State University

Abstract #048

Power-Generating Knee Strap

Krishna Devabattini, Texas A&M University Kingsville

Abstract #042

Micro-Turbine Predictive Modeling for Nano-Grids

Adel El-Shahat, Georgia Southern University;

Rami Haddad, Georgia Southern University

2:00—3:45pm Palm

ENG 109: GPS and Satellites

Session Chair:

Ulan Dakeev (Texas A&M University Kingsville)

Paper #006

Global Navigation Satellite System (GNSS) Signal Monitoring Using a High Gain Parabolic Dish System

Curtis Cohenour, Ohio University

Paper #013

A Diagnostic Clock for Verification of Image Time Synchronization

Curtis Cohenour, Ohio University

Daily Schedule – Saturday

2:00—3:45pm Volusia

ITC 406: Human Action, Interaction, Reaction

Session Chairs:

Yaomin Dong (Kettering University)

Shonda Bernadin (FAMU-FSU)

Paper #058

Assessing the Effectiveness of Run.Hide.Fight. to Lower Casualty Rates During an Academic Active Shooter Incident Compared to Shelter-In-Place and Evacuate

Jae Yong Lee, Purdue University;

Eric Dietz, Purdue University

Paper #032

Utilization of Spectral and Temporal Acoustic Features for Emotion Recognition

Tejal Udhan, Florida State University;

Shonda Bernadin, FAMU-FSU

Abstract #116

Forgiveness and Repairing Broken Trust in the Digital Age

Meriem Laifa, Mohamed El Bachir El Ibrahimi University, ALGERIA;

Samir Akhrouf, Mohamed El Bachir El Ibrahimi University, ALGERIA

Yahia Belayadi, Continuing Education University, ALGERIA;

Djamel Boubetra, Mohamed El Bachir El Ibrahimi University, ALGERIA;

Paper #126

Correct Use of a Computer Screen Using Fuzzy Control

Samir Talssi, Institute du Génie Appliqué, MOROCCO

3:45pm

Conference Program Ends

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