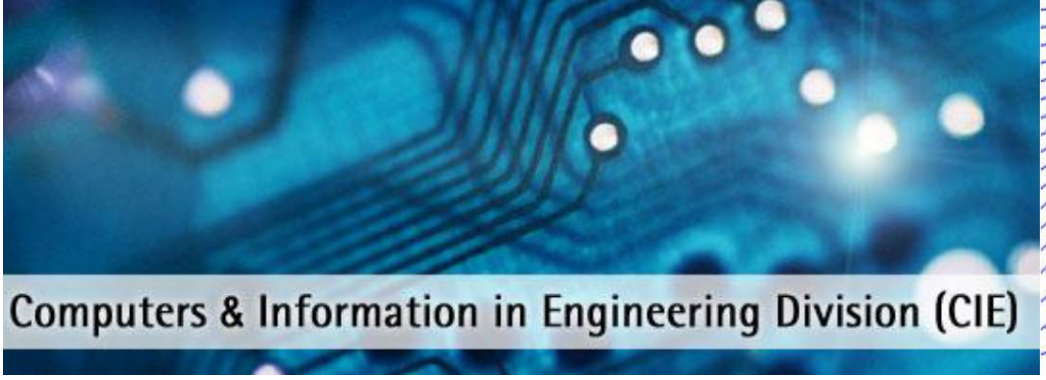

https://community.asme.org/computersinformationengineering/default.aspx

Spring 2022-2023 Newsletter

Message from the Chair

Paul Witherell

Greetings to all and welcome to the 2022-2023 edition of the Computers and Information in Engineering (CIE) Division newsletter, highlighted by our successful return to an in-person conference in 2022. After two years of virtual conferences due to COVID-19, we successfully held the 42nd Annual Computers and Information in Engineering Conference on August 14th – August 17th at the St. Louis Union Station Hotel, in St. Louis, Missouri. The CIE Conference serves as a premier venue for the international exchange of technical, scientific, and application knowledge related to the theory and practice of computing to support engineering activities. Our conference provides a forum for researchers, practitioners, educators, and students from industry, academia, and government to share their latest findings and challenges and foster a sustainable research and education community.

The 42nd Annual CIE conference included 97 accepted papers and technical presentations submitted through various technical sessions and organized around the four Technical Committees of the CIE Division, namely: Advanced Modeling and Simulation, Computer Aided Product and Process Design, Systems Engineering and Information Knowledge Management and Virtual Environments and Systems. These papers and presentations were supported at the conference by an exciting keynote talk and a diverse set of technical panels.

CIE NEWSLETTER

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Professor Azad M. Madni, a University Professor of Astronautical Engineering at the University of Southern California and member of the National Academy of Engineering, delivered the keynote "Transdisciplinary Systems Engineering: Exploiting Convergence of Systems Engineering with Other Disciplines." In his talk, Professor Madni discussed the growing convergence of systems engineering with other disciplines and the effectiveness of transforming traditional systems models into stories to be executed in a virtual world. A Division-sponsored panel on "Education for Modeling and Simulation: Emerging Needs and Recent Trends" explored some of the future roles CIE might play in an evolving digital world. These events were rounded out by two TC-sponsored panels, "The Role of the Hackathon Mechanism in Promoting Data Science in Mechanical Engineering Research and Education: Perspectives from Academia and Industry" and "Virtual Environments and Systems for Makers." Further details on

these events can be found on the 2022 IDETC webpage.

The CIE Award Luncheon was used to recognize outstanding contributors to the CIE community (recognized on Page 4), headlined by John Michopoulos receiving the CIE Lifetime Achievement Award and Satyandra K. Gupta receiving the Distinguished Service award as he concluded his term as Editor-in-Chief for CIE's Journal of Computing and Information in Engineering. Also recognized were best papers for each of the TCs (discussed in respective TC updates within) as well as the overall conference Best Paper Award, which went to Omey M. Manyar, Junyan Cheng, Reuben Levine, Vihan Krishnan, Jernej Barbic, and Satyandra K. Gupta for their paper entitled, "Synthetic Image Assisted Deep Learning Framework for Detecting Defects During Composite Sheet Layup."

The CIE Division continued our student engagement activities through the signature Graduate Student Poster Session and the first live installment of the ASME CIE Hackathon. The CIE Division awarded stipends to seven students this year to participate in the Graduate Student Poster Session, a tradition we look forward to continuing into 2023. The first in-person ASME CIE Hackathon was supported by a hybrid presence, allowing for participation from around the globe. The event saw three industry-supported problems solved by highly motivated undergraduate and graduate students for cash prizes. Full results can be found in the ASME CIE Hackathon section that follows later in the newsletter. We look forward to continuing the event at this year's conference, with registration available soon at the conference webpage.

The overall success of the 42nd CIE Conference would not have been possible without our amazing volunteers. I would like to recognize the four TC chairs for their exceptional contributions: Seung-Kum Choi, Ehsan Esfahani, Zhuo Yang, and Marina Carulli. I would like to express my sincere appreciation to all of the division's volunteers, including members of four Technical Committees, symposium organizers, and paper reviewers, for making the 2022 CIE Conference a huge success. Special thanks to the ASME staff members Andrew Koleba, Barbara Zlatnik, and Stacy Cooper for all their hard work and continued support in organizing the conference.

The Executive Committee members for the period of July 1st, 2022 – June 30th, 2023 include Chair: Paul Witherell (National Institute of Standards & Technology), Vice Chair: Caterina Rizzi (University of Bergamo), Technical Program Chair: Robert E. Wendrich (University of Twente, and Secretary: Krishnanand Kaipa (Old Dominion University). Marc Halpern (Gartner Inc.) continues to be our Industry Executive. Our past chair, Mahesh Mani (National Institute of Standards & Technology), now serves as the chair of the Honors and Awards Committee, and our division's representative at the ASME Technical & Engineering Communities (TEC) group level. Our Members-at-large include John Steuben (Naval Research Laboratory) and Daniela Faas (Olin College of Engineering).

Organization of the 2023 CIE Conference is well underway as we continue our return from the COVID-impacted events: IDETC-CIE 2023 | International Design Engineering Technical Conferences, August 13-16, 2023 (asme.org). While the paper submission deadline has passed, we still welcome (and encourage) additional technical presentation only submissions. The CIE division welcomes members of all experience levels as volunteers to continuously strengthen our community. If you are a recent graduate, early-career engineer, new faculty member, or moving into a new career phase, volunteering is a great way to get involved and to gain a sense of greater achievement. Please feel free to contact any one of us in the CIE leadership team, including the members of Executive Committee and Technical Committees listed in the later portion of this newsletter. Visit our new CIE webpage for details on ongoing virtual events such as panels and seminars:
https://www.asme.org/get-involved/technical-divisions/technical-divisions-community-pages/computers-information-in-engineering

Finally, I would like to recognize that the CIE Division has long been a forum for understanding the application of emerging digital technologies that impact critical engineering issues such as representation, product design and product development. With this in mind, we are pleased to introduce new tracks in Artificial Intelligence and Machine Learning for Engineering in our upcoming 43rd conference. We look forward to continuing to grow in these areas, so please

keep an eye on future communications and opportunities.

On behalf of the division's Executive Committee, I would like to send our new year greetings and best wishes to all members of the CIE community. See you in Boston!

Paul Witherell
CIE Division Chair
2022-2023

CIE 2022 Conference Report

Notes from Past Chair

MAHESH MANI

The CIE 2022 Conference at St. Louis was a great success! We appreciate all the dedication and hard work from the symposium organizers, technical leadership committees, track chairs, reviewers and the volunteers of the conference. We extend our thanks to our CIE keynote speaker Professor. Azad M. Madni, University of Southern California, for an engaging talk on transdisciplinary systems engineering. Special thanks to ASME staff Andy Koleba and Barbara Zlatnik for all their support and working with us as one team.

We look forward to welcoming the ASME CIE community to yet another great conference in Boston, MA. IDETC-CIE 2023 | International Design Engineering Technical Conferences, August 13-16, 2023 (asme.org)

As the CIE awards chair for 2022-2023, I would like to inform you that CIE is seeking nominations for the following division-level awards:

- *Young Engineer Award*: to recognize a promising young investigator who is making outstanding contributions to the progress in the application of computers in engineering.
- *Lifetime Achievement Award*: to recognize a person who has had a significant impact on the use of computers in engineering practice and/or education.
- *Leadership Award*: to recognize outstanding performance in one or more areas of concern to both the computer industry and the various engineering fields.
- *Excellence in Research*: CIE recognizes a person for outstanding research contributions in any field associated with the use of computers in engineering.
- *Distinguished Service Award*: to recognize a person for dedicated service in support of the CIE Division's mission.
- *Best Ph.D. Thesis/Dissertation Award*: to recognize promising young investigators who authored the best Ph.D. thesis of the year in CIE.

Details about these awards are available at: https://www.asme.org/about-asme/honors-awards/unit-awards#cie. The award nominations are due on **May 01, 2023.**

We look forward to seeing you at Boston, MA.

Division Honors and Awards

Our division's honors and awards were awarded during our annual CIE 2022 conference, during the CIE Awards Luncheon held on Monday, August 15.

2022 CIE LIFETIME ACHIEVEMENT AWARD

John Michopoulos

This year's recepient of the ASME CIE Lifetime Acievement Award was John G. Michopoulos from Naval Research Laboratory in recognition of his *significant* achievements and contributions in the discipline of Computers and Information in Engineering.

2022 CIE EXCELLENCE IN RESEARCH AWARD

Sundar Krishnamurty

The 2022 ASME CIE Excellence in Research Award was awarded to Prof. Sundar Krishnamurty at University of Massachusetts Amherst, in recognition of his outstanding ability and potential for making significant contributions to the discipline the discipline of computers and information in engineering.

2022 CIE LEADERSHIP AWARD

Michael Payne

The 2022 CIE Leadership Award was awarded to Michael Payne from Kenesto Corp., in recognition of his outstanding ability and potential for making significant contributions to the discipline of computers and information in engineering.

2022 CIE YOUNG ENGINEER AWARD

Zhenghui Sha

The recepient of the 2022 CIE Young Engineer Award was Zhenghui Sha at University of Texas, Austin, in recognition of his outstanding contributions and applications of Computers and Information in Engineering.

2022 CIE DISTINGUISHED SERVICE AWARD

This year two ASME CIE Distinguished Service Awards have been presented in recognition of their distinguished and outstanding service for the Computers and Information in Engineering division of ASME. The two recipients of 2022 ASME CIE Distinguished Service Award are Mahesh Mani at Department of Energy and Satyandra Gupta at University of Southern California.

Mahesh Mani

Satyandra Gupta

2022 JCISE DISTINGUISHED SERVICE AWARD

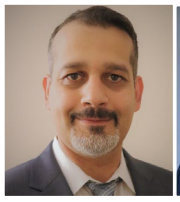
Satyandra Gupta

The 2022 JCISE Distinguished Service Award was awarded to Satyandra Gupta at University of Southern California in recognition of his distinguished and outstanding service for the ASME Journal of Computing and Information Science in Engineering.

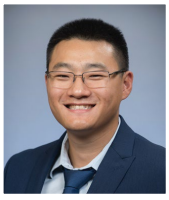
2022 CIE TC LEADERSHIP AWARDS

Four awards have been presented in recognition of outstanding leadership, one for each Technical Committee: AMS TC- Seung-Kum Choi from Georgia Institute of Technology, CAPPD TC – Ehsan Esfahani from University of Buffalo, SEIKEM TC – Zhuo Yang from NIST, VES TC - Marina Carulli from Politecnico di Milano, Italy.

Seung-Kum Choi



Ehsan Esfahani



Zhuo Yang

Marina Carulli

2022 IDETC CIE CONFERENCE CHAIR AWARDS

The 2022 CIE Conference Chair Awards were presented to three recepients—Yan Wang at Georgia Tech, Cameron Turner at Clemson University, and Jitesh Panchal at Purdue University—in recognition of appreciation of their outstanding service to the ASME IDETC CIE Conferences as 2022 Program Chairs.


Yan Wang


Cameron Turner


Jitesh Panchal

2022 CIE BEST PHD DISSERTATION AWARD

The 2022 CIE Best PhD Dissertation Award was presented to Yinan Wang from Virginia Tech in recognition of the best Ph.D. dissertation of the year in Computers and Information in Engineering entitled, "*Engineering-driven Machine Learning Methods for System Intelligence*."

2022 CIE BEST PAPER AWARD

The 2022 CIE Best Paper Award was presented to Omey M. Manyar, Junyan Cheng, Reuben Levine, Vihan Krishnan, Jernej Barbic, and Satyandra K. Gupta for their paper entitled, "

Synthetic Image Assisted Deep Learning Framework for Detecting Defects During Composite Sheet Layup," IDETC/CIE 90084.

SHORT ABSTRACT OF THE 2022 CIE BEST PAPER

Automation of high-performance manufacturing processes such as prepreg composite layup has been gaining a lot of interest lately. Reliable and accurate defect detection methods play a crucial role in the automation of such processes to maintain the desired quality. The composite prepreg layup process involves manipulation of sheet-like material. Traditional machine vision-based defect detection techniques are inept in detecting defects for such complex processes due to the nature of the defects. Advanced defect detection techniques enabled by deep learning are the key for such applications. However, Deep learning usually requires an enormous amount of physical images of the process which is infeasible in high-mix manufacturing applications. In this paper, we resolve the data generation problem for deep learning by presenting an approach where with a combination of finite element-based simulation and advanced graphics techniques we generate a dataset of photorealistic images of the defects. Approximately, 10000 synthetic images are generated and combined with around 1000 images of real sheets to train a ResNeSt-based deep learning model. We have also devised an efficient 2-stage methodology for training the deep learning network to detect wrinkle-like defects. With the trained model and data augmentation techniques, our method can achieve a mean Average Precision (mAP) of 0.98 on actual production data for detecting defects. The code and the entire dataset are available at: https://github.com/RROS-Lab/DeepSynthDefectDetector.

TECHNICAL COMMITTEE REPORTS

ADVANCED MODELING AND SIMULATION (AMS)

PIYUSH PANDITA

The Advanced Modeling and Simulation Symposium track provides a venue for researchers to present the original research topics of modeling and simulation, including theoretical advances in modeling and simulation in engineering, advances in finite element methodology, novel numerical techniques, advances in discretization, and industrial applications of modeling and simulation.

The total number of papers increased two-fold compared to the previous year that had been affedted by the COVID-19 pandemic. As a result, the number of sessions and symposiums was also increased to allow for more in-person attendance. A total of 17 papers were accepted among the six symposiums of AMS. Of these, 11 papers were among the six symposiums organized directly by AMS, and 6 paper was accepted under the symposium jointly organized by CAPPD. A total of 25 papers were accepted among the two symposiums of CIE-General (AI & Additive Manufacturing). The presented topics ranged from applications of advanced simulations related to in-situ monitoring, modeling and design methods for additive manufacturing, and uncertainty quantification for complex systems.

The AMS symposium topics presented via virtual conferencing systems include the following:

- **AMS General (CIE-01):** This symposium covered a wide range of topics on modeling and simulation that were not included in the special sessions below.
- **Inverse Problems in Science & Engineering (CIE-02):** The algorithmic methods for the solution of inverse problems could be grouped into two basic approaches: pure inverse methods and optimization-based methods. That is, in some methods, sophisticated regularization formulations are used. In other methods, different optimization algorithms are used as tools to solve de-facto inverse problems. In this symposium, papers on Inverse Problems and their applications from leading international and interdisciplinary research communities were presented.
- **Computational Multiphysics Applications (CIE-03):** Computational modeling and simulation of multiphysics systems in engineering requires development of sophisticated models, integration methods, numerical algorithms, and computational techniques. This symposium featured presentations on applying these methods to problems ranging from modeling of wind turbine blade erosion to optimal friction stir welding of aircraft structures.
- **Uncertainty Quantification in Simulation and Model Verification & Validation (CIE-04):** Uncertainties are inherent in computational models because of abstraction and numerical treatments. This symposium was conducted in one session. Methods for quantification of uncertainties in simulation and their applications in composite structures, flip-chip package, and welded joints were presented.
- **Simulation in Advanced Manufacturing(CIE-05):** This symposium covered the state-of-the-art research results on human modeling and simulation in engineering, with applications of digital human modeling and simulation occur in industry, military, and clinical practice.
- **Material Characterization Methods and Applications (CIE-06):** Material characterization is a crucial modeling process as its ability to capture material constitutive behavior physics has a significant impact on the correctness of computational simulation. This symposium covers a wide range of material characterization issues, including the development of methods and their applications and advancing material characterization for high-performance

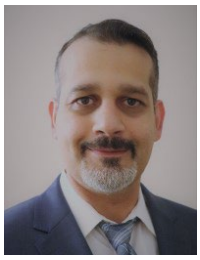
in one session.

- **Design, Simulation, and Optimization for Additive Manufacturing:** Simulation plays an important role to understand the detailed processes of additive manufacturing. This symposium was jointly organized by **AMS, SEIKM, and CAPPD,** and was conducted in three sessions. Papers on various aspects of additive manufacturing including material defect reconstruction, hybrid modeling method, toolpath planning, morphological analysis, extrusion parameter analysis, parallelized manufacturing, measured data alignment method, and machine learning methods for additive manufacturing were presented.

AMS contributed several graduate student posters that were presented in the CIE student poster session jointly organized by the various CIE technical committees.

COMPUTER-AIDED PRODUCT AND PROCESS DEVELOPMENT (CAPPD)

EHSAN T. ESFAHANI



As part of the 2022 CIE conference, CAPPD organized six symposia: 1) CAPPD general, 2) Human-in-the loop product design and automation and digital human modelling , 3) Product and process design automation and computational fabrication , 4) Design, simulation and optimization for additive manufacturing, organized jointly with AMS and SIEKM, 5) Digital twin: advanced human modeling and simulation in engineering, organized jointly with AMS, 6) artificial intelligence and machine learning in design and manufacturing, organized jointly with AMS and SEIKM.

As in the past, the CAPPD technical committee continued to organize the CIE Graduate Student Poster Session. Despite the challenges posed by the pandemic, thanks to the outstanding efforts of the CAPPD

The 2022 AMS Best Paper was awarded to: IDETC2022-87995, "Reinforcement learning based sequential batch-sampling for Bayesian optimal experimental design," Yonatan Ashenafi et. al. on the topic: Computational Multiphysics Applications

2023 AMS TC Leadership

Chair: Piyush Pandita, General Electric Research, piyush.pandita@ge.com

Vice-chair: Anh Tran, Sandia National Laboratories, anhtran@sandia.gov

James Yang, Texas Tech University, james.yang@ttu.edu

Secretary: Ashish Chaudhari, MIT,amchaudhari@mit.edu

Members-at-large: Dehao Liu, Binghamton University, dehaoliu@binghamton.edu

Mike Xiang, Oklahoma State

- University, yujiang.xiang@okstate.edu

secretary, Jida Huang, this year's poster session drew 7 poster submissions from 5 different institutes in the United States.

CIE CAPPD BEST PAPER AWARD

The 2022 CAPPD Best Paper Award was awarded to: IDETC2022-90176, "Shaporator: Enabling Design Iteration for Young Designers Through Shape Verbalization" by Shantanu Vyas, Ting-Ju Chen, Jay Woodward, Vinayak Krishnamurthy, in the symposium of human-in-the loop product design and automation and digital human modelling.

2022-2023 CAPPD TC LEADERSHIP

Chair: Anand Balu Nellippallil, Florida Institute of Technology (anellippallil@fit.edu)

Vice Chair: Jida Huang, University of Illinois at Chicago (jida@uic.edu)

Secretary: Jun Wang, University of Maryland (jwang22@scu.edu)

Member-at-large: Satchit Ramnath, The Ohio State University (ramnath.17@osu.edu)

Past Chair: Ehsan T. Esfahani, University at Buffalo (ehsanesf@buffalo.edu)

VIRTUAL ENVIRONMENTS & SYSTEMS (VES)

MARINA CARULLI

The Virtual Environment & Systems (VES) Symposium track hosted a total number of 11 technical papers organized in 3 sessions. VES Symposium provides a forum to researchers to share their experiences and knowledge on a variety of topics such as: Design Tools and VR- Systems; Portable and wearable VR Systems, Multisensory Interactive Technologies; Simulation and Interaction; Enhanced Visualization and Motion-Based Design Systems; Methods and Tools for Developing Virtual Environments in Design Engineering, Multiple Realities (i.e. VR-AR-MR-XR) and Blended Spaces; Immersive Learning and Education with VR and AR based systems; Gamification through Virtual Environments; Methods, Processes and Strategies for Technology, User Experience and User Interfaces, Natural User Interface for VR and AR, Artificial Intelligence and Machine Learning Approaches for Virtual Environments. These topics have been organized into 3 main themes as follows:

- Data Management: Big Data and Deep Learning in Virtual Environments for Design Engineering;
- Tracking and Sensing (Strategies, Hardware, and Software): Emerging Technologies and New Challenges;
- Interactive and Multisensory User Interfaces.

The VES community has expressions of interest and focus on the use of virtual reality technologies applicable to a plethora of domains. The design and operation of engineered and/or cyber-physical systems present unique challenges and opportunities for integrating human intelligence, cognition, multi-sensory aspects, and decision-making with computer intelligence. Issues related to enabling humans to visualize, simulate and make decision in the context of large amounts of data, choice-architecture on information and as one of many agents or stakeholders in D&E processes. Over the years the VES Community reached and demonstrated high scientific quality in their sessions, contributions and outreach/crossover to other domains and disciplines. The VES community is always looking for researchers and domain-experts (including cross-domains, multi-disciplinary) to expand and strengthen their platform and research endeavors. Please feel free to contact us (see below) if you are interested to join, participate or get involved.

VES TECHNICAL COMMITTEE BEST PAPER AWARD

The 2022 VES Best Paper was awarded to: DETC2022-90962, "Human-Centric Facility Layout and Production Planning in Mixed Reality" by Dawi Karomati Baroroh and Chih-Hsing Chu on the topic of Methods, Processes, and Technologies for VR, AR, and MR.

2021-2022 VES TC LEADERSHIP

Chair: Marina Carulli, Politecnico di Milano, marina.carulli@polimi.it

Vice-Chair: Vinayak Krishnamurthy, Texas A&M University, USA, vinayak@tamu,edu

Secretary: Christian E. Lopez Bencosme, Lafayette College, USA, lopezbec@lafayette.edu

Member-at-large: Andrea Vitali, University of Bergamo, andrea.vitali1@unibg.it

SYSTEMS ENGINEERING, INFORMATION AND KNOWLEDGE MANAGEMENT (SEIKM)

DOUGLAS L. VAN BOSSUYT

The goal of the Systems Engineering, Information, and Knowledge Management (SEIKM) Technical Committee (TC) is two-fold; (i) to serve the SEIKM community in the broad computer and information engineering field through activities promoting the dissemination of new knowledge and new technology, and (ii) to advance research related to design, engineering, and operation of systems where complexity, connectivity, uncertainty, knowledge discovery, and management present unique challenges. As the interest in IoT, big data, machine learning and AI, cyber-physical systems, digital twin, and sociotechnical systems has grown, there is room for significant collaborative research impact from our community. To help both the research community as well as industry, several efforts have been made by the SEIKM TC in the last year, including the CIE 2022 virtual conference, ASME-CIE Hackathon event.

For the CIE 2022 conference, ten sessions were organized/co-organized by the SEIKM TC.

The number of total research article submissions was 33 including submissions to the joint sessions. The number of accepted was 25. The acceptance rate was 73%. Twenty three research articles were presented in the topic areas of *SEIKM General*, *Design Informatics*, *Systems and complex Systems Engineering, and Knowledge Capture, Reuse, and Management.*

To continue showcasing and highlighting the need of emerging big data and AI technology to address the challenges associated with the systems engineering and design (SE&D) research, SEIKM TC at the 2022 ASME IDETC/CIE organized the machine learning and AI session the third time. This year, the research focused on artificial intelligence and machine learning in design and manufacturing. This topic that accepted 15 research articles. At the same time, a new joint session titled *Design, Simulation, and Optimization for Additive Manufacturing* attracted 10 papers. The 2022 SEIKM Best Paper was awarded to: IDETC2022-90067 Multi-Mission Engineering With Zero Trust: A Modeling Methodology and Application to Contested Offshore Wind Farms by Douglas L. Van Bossuyt - Naval Postgraduate School, Britta Hale - Naval Postgraduate School, Ryan Arlitt - Technical University of Denmark, and Nikolaos Papakonstantinou - VTT Technical Research Centre of Finland.

With support from ASME, the SEIKM once again successfully organized the hackathon event as part of pre-conference activity for CIE 2022. The event offered three data science problems open to student participants. The three problems were: Problem 1: *Segmenting medical images toward digital twin in healthcare,* Problem 2: *Digital manufacturing cybersecurity strategies for protecting valuable information in design files,* Problem 3: *Characterizing similarity from computer-aided design (CAD) Assemblies*. This year, three problems shoot from different angle to provide diversity to the event. The first problem was provided by Medical IP Co., Ltd. and focused on how X-ray CT images from various image acquisition conditions change depending on manufacturers, enhanced contrast, slice thickness, and so on. The data types included dicom, nifti, and mip files. The second problem was provided by NYU Tandon and NIST, and focused on an STL file that showed a 3D model of an object where there were five hints that were hidden throughout the files. Each hint that could be decoded got the student teams closer to the location of a lost passport. Teams received points based on how many puzzles they could decode correctly and their method of solving the challenges. The third problem was provided by Autodesk Research and focused on a Fusion 360 Gallery Assembly Dataset, which contained 8,251 assemblies and a total of 154,468 separate parts (i.e., bodies). To simplify the search space, student teamrs were provided with a smaller subset of this dataset. Each of the assemblies contained the following information: assembly-level information (e.g. semantic name, physical properties, assembly tree hierarchy, etc.), as well as the individual bodies along with their connection information that make up the assemblies. Each body that belonged to the assembly also had its body-level information (e.g. semantic name, material category, etc.). SEIKM TC and the ASME Hackathon Committee, working together with volunteering mentors and judges from various organizations and institutes, were able to organize the competing hackathon teams to develop and present solutions for the problems within 24 hours. To make the competition more attractive, the organizing committee also offered multiple tutorials sessions as well as special challenges during the event.

The CIE hackathon event attracted 27 participants from numerous institutes where majority were from US universities. They formed 7 teams and competed across the three problems. This year, each team could choose as many problems as they want to complete. At the end of the hackathon, the teams were asked to submit their findings and give a 15 minutes presentation. Judges sitting in three parallel presentation sessions gave scores to each team based on their technical approach, result and overall presentation skill.

SEIKM TECHNICAL COMMITTEE BEST PAPER AWARD

The 2022 SEIKM Best Paper was awarded to: IDETC2022-90067 Multi-Mission Engineering With Zero Trust: A Modeling Methodology and Application to Contested Offshore Wind Farms by Douglas L. Van Bossuyt - Naval Postgraduate School, Britta Hale - Naval Postgraduate School, Ryan Arlitt - Technical University of Denmark, and Nikolaos Papakonstantinou - VTT Technical Research Centre of Finland.

2022-2023 SEIKM TC LEADERSHIP

TC Chair: Douglas L. Van Bossuyt, Naval Postgraduate School, douglas.vanbossuyt@nps.edu

Program Chair: Hyunwoong Ko Arizona State University Hyunwoong.Ko@asu.edu

Secretary: Dazhong Wu, University of Central Florida, dazhong.wu@ucf.edu

Awards Chair / Past Chair: Zhuo Yang, University of Massachusetts Amherst, zhuoyang@umass.edu

ASME Hackathon Committee: Hyunwoong Ko Hyunwoong.Ko@asu.edu, Dehao Liu dehaoliu@binghamton.edu, Anh Tran anhtran@sandia.gov, Yinan Wang, Fahad Milaat fahad.milaat@nist.gov

ASME Hackathon Student Committee Members: Jiarui Xie jiarui.xie@mail.mcgill.ca, Jaehyuk Kim jaehyuk.kim@nist.gov

ASME® 2022 HACKATHON

ASME-CIE Hackathon
August 13-14, 2022

HYUNWOONG KO

The Computer & Information in Engineering (CIE) Division of the American Society of Mechanical Engineers (ASME) held two hackathon events at the IDETC/CIE 2020 and 2021 Conferences. These 24-hour hackathon events provide students and engineering practitioners with a unique opportunity to learn how data-science and machine-learning techniques can be leveraged to solve real-world engineering problems.

Given the previous resounding successes, the CIE Division held the ASME-CIE Hackathon again at the IDETC/CIE 2022 Conference, for the first time in a hybrid form, as a pre-conference event from Aug. 13-14, 2022. The motivation of the ASME Hackathon initiative is to support an engaging and inclusive platform for researchers to practice data-driven discovery and explore new data-science and machine-learning techniques appropriate for using structured and unstructured data.

The theme of the ASME-CIE 2022 Hackathon was "Explore the Digital Frontiers of Mechanical Engineering". This year's hackathon offered three data-science problems open to student participants. The first problem is "Segmenting Medical Images toward Digital Twin in Healthcare" provided by *MeditalIP*. The second problem, "Digital Manufacturing Cybersecurity Strategies for Protecting Valuable Information in Design Files", is provided by *New York University (NYU) Tandon School of Engineering*. The third problem is "Characterizing Similarity from Computer-Aided Design Assemblies" provided by *Autodesk*.

The three problems gave diversity to the hackathon event. The MedicalIP problem addressed the segmentation of medical images such as computerized tomography data, which is essential for generating a digital twin of a patient body in healthcare. The NYU problem provided a data set to assess the robustness of security strategies to hide information in the design files for digital manufacturing and stimulate a critical thinking process. The Autodesk problem offered big data of assembly graphs and images that allowed the participants to come up with open-ended solutions for characterizing similarities between designs.

The hackathon committee, working with volunteering mentors and judges from various organizations and institutes, formed a team to organize the 24-hour event. To make the competition more attractive, the team offered multiple Q&A sessions and a special meme challenge during the event. After the event, the hackathon committee and the ASME SEIKM committee organized a panel session during the IDETC/CIE 2022 Conference on "The Role of Hackathon Mechanism in Promoting Data Science in Mechanical Engineering Research and Education: Perspectives from Academia and Industry." This panel invited the hackathon organizers, judges, and winners from both academia and industry to share their experiences in participating in the hackathon event. The panelists and audiences discussed 1) the ways and mechanisms to build academia-industry relationships in providing students with practical data-driven engineering problems and hands-on experiences, 2) how to train the data-literate mechanical engineers that can harness the data revolution in different engineering fields, and 3) the connections and gaps between data-science education in the classroom and data-science applications in industry.

The hackathon event attracted twenty-two participants from twelve institutes and four countries. The majority are from US universities. The participants formed eighteen teams and competed for the three problems. A participant could be in multiple teams to solve multiple problems. At the end of the event, the teams were asked to submit their findings and give a 15-minute presentation. The judges sitting in three parallel presentation sessions gave scores to each team based on their technical approach, result, and overall presentation skill. After the presentations, there was an award ceremony.

The ASME-CIE 2022 Hackathon, the third hackathon event within the ASME, provided students with opportunities to work on the actual manufacturing and design data of frontier technologies. The hackathon benefits both academia and industry as a platform to connect education and practical problems with real-world data.

Winners of ASME-CIE 2022 Hackathon

Problem 1: Segmenting medical images toward digital twin in healthcare

First Place: Team Learning machine - Peijie Qiu

Second Place: Team Idea - Jaebong Cho, Jihoon Nam

Third Place; Team DeCoDe - Noah Bagazinski, Lyle Regenwetter

Problem 3: Digital manufacturing cybersecurity strategies for protecting valuable information in design files

First Place: Team Tesseract - Xingang Li, Bhairav Phukan

Second Place: Team #3DBenchy - Daniel Weber, Ethan Wescoat

Third Place: Team DeCoDe - Noah Bagazinski, Lyle Regenwetter

Problem 3: Characterizing similarity from computer-aided design (CAD) Assemblies

First Place: Team Data Ripper - Qingyu Xiao, Xiaotong Sun

Second Place: Jia Choi

Third Place: Team NEU M3 - Ghasemi Parisa, Yi Han

ASME CIE Hackathon Organizers

HYUNWOONG KO

YAN LU

ZHENGHUI SHA

Poster Session and Awards

The ASME-CIE Graduate Research Poster session is an opportunity for graduate students in the preliminary phase of their research programs (MS or within 2 years of starting a PhD) to present their current work to the CIE research community. This session provides the students a chance to obtain external feedback on their preliminary research that may not yet be ready for presentation at the conference in archival form.

This year the CIE Division selected and supported seven students from four Universities to participate in the CIE Graduate Student Poster Session. The 2022 CIE poster session awardees are listed below.

Chair: Jida Huang, University of Illinois, Chicago

1. Xiaoou Yang, "An Experimental Framework for Implementing an Ethical CyberPhysical-Social System," University of Georgia, IDETC2022-90866.
2. Soonmoon Jung, Hyeyeong Song, Yeeun Kang, Junghwa Hong, "Prediction of the Acceleration Applied to Driver's Upper Body During Driving Using Narx Algorithm," Korea University, IDETC2022-91258.
3. Sina Rastegarzadeh, "Exploring Mechanical Property Space by Developing Novel Multi-Material Filled Cellular Structures," University of Illinois, Chicago, IDETC2022-97834.
4. Parth Ganeriwala, "Natural Language Processing to Model Based Systems Engineering in the Architecture Analysis and Design Language (AADL)," Florida Institute of Technology, IDETC2022-97938.
5. Ashutosh Mishra, "Heterogeneous Porous Biomedical Scaffold Design With Functional Representation-Based Microstructures," University of Illinois, Chicago, IDETC2022-97844.
6. Mathew Baby, "Decision Support in the Design of Robust and Resilient Manufacturing Supply Networks," Florida Institute of Technology, IDETC2022-97991.
7. Logan Smith, "Designing for Excess: An Examination of Requirement Excess Potential," University of Georgia, IDETC2022-98105.

Keynote Panel

On Tuesday, August 16, the ASME CIE division held a keynote panel with participants from academia, industry and government, entitled "**Education for Modeling and Simulation: Emerging Needs and Recent Trends**." In this panel, we heard from experts in the industry, academia, and government about how the digital and advanced technology trends and needs are changing the educational needs of Modeling and Simulation. The panelists addressed questions from the audience whether the new workforce is properly skilled and trained for M&S adoption, integration, and application, and the respective revisions and interventions that need to be incorporated into the teaching and learning curricula at the undergraduate and graduate levels. The panelists included: Gaurav Ameta—Senior Key Expert, Siemens; S. Daniela Faas—Associate Professor of the Practice and Director of Fabrication and Laboratory Operations, Ollin College of Engineering; John Michopoulos—Senior Research Scientist, U.S. Naval Research Laboratory; Michael Payne—CEO, Kenesto; Cameron Turner—Associate Professor, Clemson University. The panel organizers included Robert Wendrich, Krishnanand Kaipa, Marc Halpern, Paul Witherell, and Caterina Rizzi. The panel was moderated by Krishnanand Kaipa.

AWARD NOMINATIONS

NOMINATE YOUR COLLEAGUES FOR CIE DIVISION AWARDS

- Best Paper Award
- Best Ph.D. Thesis/Dissertation Award
- Distinguished Service Award
- Excellence In Research Award
- Leadership Award
- Lifetime Achievement Award
- Young Engineer Award

For details visit: https://www.asme.org/about-asme/get-involved/honors-awards/unit-awards

Submit to **Mahesh Mani** (mahesh.n.mani@nist.gov)

UPDATES FROM ASME JOURNAL OF COMPUTING AND INFORMATION SCIENCE IN ENGINEERING (JCISE)

YAN WANG, EDITOR, JCISE

OVERVIEW

ASME Journal of Computing and Information Science in Engineering (JCISE) publishes articles related to scientific computing methods (e.g., modeling, simulation, representation, algorithm) and computational tools (e.g., high-performance computing, virtual and augmented reality) that aim to improve engineering products and systems for their complete lifecycle (e.g., design, manufacturing, operation, maintenance, disposal, and recycling). The target audience and application areas for JCISE are mainly in mechanical engineering. New computational methodologies are of interest for the audience.

The JCISE thrust areas and the respective leading Associated Editors are:

- Computer-Aided Design and Manufacturing
    - Gaurav Ameta, Siemens Corporate Technology
    - Matthew Campbell, Oregon State University
    - Jonathan R. Corney, University of Edinburgh
    - Balan Gurumoorthy, Indian Institute of Science
    - P.V.M. Rao, Indian Institute of Technology Delhi
- Computational Geometry and Geometry Processing
    - Stephen Baek, University of Virginia
    - Ajay Joneja, Hong Kong University of Science and Technology
    - Saigopal Nelaturi, Palo Alto Research Center
    - Charlie C.L. Wang, University of Manchester
- Additive Manufacturing
    - Yong Chen, University of Southern California
    - Tsz Ho Kwok, Concordia University
    - Yayue Pan, University of Illinois at Chicago
- Systems Engineering and Engineering Informatics
    - Yusheng Liu, Zhejiang University
    - Yongsheng Ma, Southern University of Science and Technology
    - Duhwan Mun, Korea University
    - Chris Paredis, Clemson University
- Precision Engineering and Digitalization
    - Nabil Anwer, Ecole Normale Superieure Paris-Saclay
    - Jun Wang, Nanjing University of Aeronautics and Astronautics
    - Kristina Wärmefjord, Chalmers University of Technology
- Engineering Optimization
    - Kazuhiro Saitou, University of Michigan
    - Yu Song, Delft University of Technology
    - Krishnan Suresh, University of Wisconsin – Madison
- Scientific Computing and Advanced Simulation
    - Ashok Kumar, University of Florida
    - Guang Lin, Purdue University
    - John Michopoulos, Naval Research Laboratory
- Sustainability and Product Lifecycle Management
    - Bin He, Shanghai University
    - William Bernstein, Air Force Research Laboratory
- Cyber-Physical Systems and Cyber-Manufacturing

  - Chih-Hsing Chu, National Tsing Hua University
  - Yan Lu, National Institute of Standards and Technology
  - Mahesh Mani, U.S. Department of Energy

- Machine Intelligence and Robotics System
  - Ehsan Esfahani, State University of New York at Buffalo
  - Krishnanand Kaipa, Old Dominion University
  - Anurag Purwar, Stony Brook University
  - Atul Thakur, Indian Institute of Technology Patna

- Human-Computer Interface and Human Modeling
  - Monica Bordegoni, Politecnico di Milano
  - Francesco Ferrise, Politecnico di Milano
  - Caterina Rizzi, University of Bergamo

- Data Analytics and Machine Learning
  - Linkan Bian, Mississippi State University
  - Ying Liu, Cardiff University
  - Rahul Rai, Clemson University
  - Zhinan Zhang, Shanghai Jiao Tong University

JOURNAL STATISTICS FOR PAPERS SUBMITTED IN 2021

Submitted Papers: 449
Accepted Papers: 97

Currently JCISE publishes 6 issues per year. Starting from 2024, we will be publishing 12 issues per year.

SPECIAL ISSUES

JCISE published a special issue called "Highlights of CIE 2021" in June 2022. This issue featured 14 papers. Marina Carulli, Seung-Kyum Choi, Tsz Ho Kwok, Yan Lu, Mahesh Mani, and Paul Witherell served as Guest Editors for this special issue. A special section of 5 selected papers from IMECE 2021 were published in August 2022.

A special section of "Symbiotic Human-Artificial Intelligence Partnership for Next-Generation Factories" was published in October 2022, edited by Ehsan Esfahani, Bin He, Chih-Hsing Chu, Ying Liu, Rahul Rai, and Gaurav Ameta. This special section aims to harvest the latest efforts in fundamental methodologies as well as their applications in human-AI partnership with specific applications for next-generation factories encompassing the design process to manufacturing, production, and inspection. Two review papers, five research papers, and one technical brief are included.

A special section of "Data Wrangling to Support Research on Engineering Design and Manufacturing" was published in December 2022. The guest editors are Christopher McComb, William Bernstein, Vincenzo Ferrero, Timothy Simpson, Nicholas Meisel, and Binil Starly. This special section aims to capture contemporary perspectives on both the challenges and opportunities regarding the generation, collection, curation, storage, transmission, and transformation of engineering design and manufacturing data in digital databases and repositories. Six research papers were published.

A special issue of "Machine Intelligence for Engineering Under Uncertainties" was recently published in January 2023. The guest editors are Amir Gandomi, Marc Mignolet, Christian Soize, and Yan Wang. This special issue is dedicated to the most recent development of machine intelligence methods to solve complex engineering problems with the consideration of uncertainties. The selected collection of 14 articles shed some light on the latest trends in scientific computing and uncertainty quantification for complex problems. A wide range of topics such as model order reduction, inverse problem, sparse regression, physics-informed neural networks, and probabilistic surrogate modeling are covered, with applications in manufacturing, materials, wind farm, nuclear forensics, and transportation.

In addition, you are encouraged to look into the exciting work of other colleagues published in the regular issues of February 2022 and April 2022.

Over the next year, JCISE is planning the

following special issues/sections:

- Highlights of CIE 2022 (June 2023)
- Machine Learning and Representation Issues in CAD/CAM (October 2023)
- Extended Reality in Design and Manufacturing (December 2023)
- Cybersecurity in Manufacturing (February 2024)
- Digitalization and Reverse Engineering for Additive Manufacturing (April 2024)

DIGITAL MEDIA

JCISE launched a series of initiatives to serve the community: webinars featuring recent journal publications, YouTube channel, LinkedIn page, and companion website, www.asmejcise.org.

Digital Media Associate Editors:

- Vinayak Raman Krishnamurthy, Texas A&M University
- Douglas Van Bossuyt, Naval Postgraduate School

JCISE provides authors the opportunity for enhancing the visibility of the published paper by sharing a short (3-4 min) video highlight at the JCISE Youtube Channel. The copyright of the video remains with the authors.

There are two options for the authors: (1) upload and publish the video on authors' own Youtube channel and share the link with the JCISE Youtube channel; or (2) upload and publish the video directly on the JCISE Youtube channel.

SPOTLIGHT TALKS

JCISE regularly hosts bimonthly Spotlight Talk webinars. The most recent video recordings of the spotlight talks are listed on the video page of the companion website. The recent featured articles include:

- HyunKi Lee, Tejas G. Puranik, Dimitri N. Mavris. "Deep Spatio-Temporal Neural Networks for Risk Prediction and Decision Support in Aviation Operations." JCISE, August 2021, 21(4): 041013.
- Ronak R. Mohanty, Riddhi R. Adhikari, Vinayak R. Krishnamurthy. "Motoric and Perceptual Kinesthetic Symmetry in Bi-manual Interactions." JCISE, October 2021, 21(5): 050908.
- Jida Huang, Tsz Ho Kwok. "Segmentation-Based Wireframe Generation for Parametric Modeling of Human Body Shapes." JCISE, December 2021, 21(6): 061007.
- Samuel Lorin, Julia Madrid, Rikard Söderberg, Kristina Wärmefjord, "A New Heat Source Model for Keyhole Mode Laser Welding," JCISE, February 2022, 22(1): 011004.
- Yao Li, Thenkurussi Kesavadas. "SSVEP-Based Brain-Computer Interface for Part-Picking Robotic Co-Worker." JCISE, April 2022, 22(2): 021001.
- Monica Bordegoni, Marina Carulli, Elena Spadoni. "Multisensory Virtual Reality for Delivering Training Content to Machinery Operator," JCISE, June 2022, 22(3): 031003.
- Michael Hoffman, Eunhye Song, Michael Brundage, Soundar Kumara. "Online Maintenance Prioritization Via Monte Carlo Tree Search and Case-Based Reasoning," JCISE, August 2022, 22(4): 041005.
- Glen Williams, Nicholas A. Meisel, Timothy W. Simpson, Christopher McComb. "Design for Artificial Intelligence: Proposing a Conceptual Framework Grounded in Data Wrangling," JCISE, December 2022, 22(6): 060903.

JCISE hosted a special Sportlight Talk session on August 16, 2022 at the IDETC-CIE conference in St. Louis, Missourri. The featured articles in the session are:

- Seyedeh Elaheh Ghiasian, Kemper Lewis. "A Recommender System for the Additive Manufacturing of Component Inventories Using Machine Learning," JCISE, February 2022, 22(1): 011006.
- Shashank Sharma, Anurag Purwar. "A Machine Learning Approach to Solve the Alt-Burmester Problem for Synthesis of Defect-Free Spatial Mechanisms," JCISE, April 2022, 22(2): 021003.
- L. Siddharth, Lucienne T. M. Blessing, Kristin L. Wood, Jianxi Luo. "Engineering Knowledge Graph From Patent Database," JCISE, April 2022, 22(2): 021008.

- Hao Ji, Yan Jin. "Knowledge Acquisition of Self-Organizing Systems With Deep Multiagent Reinforcement Learning," JCISE, April 2022, 22(2): 021010.

43RD ASME COMPUTERS AND INFORMATION ENGINEERING CONFERENCE (CIE)

CALL FOR PAPERS

https://event.asme.org/IDETC-CIE

The CIE Division is excited to put out a call for papers for the 43rd CIE Conference, to be held in August 20-23, 2023, Boston Park Plaza, Boston, MA, USA. All five CIE tracks are soliciting papers in all aspects of computer applications on experimental, numerical, or analytical studies, with emphasis on the highlighted topic areas.

TRACK SYMPOSIUMS

- Advanced Modeling and Simulation (AMS)
- Computer-Aided Product and Process Development (CAPPD)
- Virtual Environments and Systems (VES)
- Systems Engineering Information Knowledge Management (SEIKM)
- Artificial Intelligence+Machine Learning (AI+ML) Approaches for Engineering

TRACK SYMPOSIUM TOPICS

- CIE-01 AMS: Advanced Modeling and Simulation (AMS General)
- CIE-02 AMS: Inverse Problems in Science and Engineering
- CIE-03 AMS: Computational Multiphysics Applications
- CIE-04 AMS: Uncertainty Quantification in Simulation and Model Verification & Validation
- CIE-05 AMS: Simulation in Advanced Manufacturing
- CIE-06 AMS: Material Characterization Methods and Applications
- CIE-07 CAPPD: Computer-Aided Product and Process Development (CAPPD General)
- CIE-08 CAPPD: Human-in-the-Loop Product Design and Automation
- CIE-09 CAPPD: Digital Human Modeling for Design and Manufacturing
- CIE-10 CAPPD: Product & Process Design Automation for Industry 4.0
- CIE-11 CAPPD: Data-driven Product Design and Fabrication
- CIE-12 SEIKM: Systems Engineering Information Knowledge Management (SEIKM General)
- CIE-13 SEIKM: Design Informatics
- CIE-14 SEIKM: Systems Engineering and Complex Systems
- CIE-15 SEIKM: Knowledge Capture, Reuse, and Management
- CIE-16 SEIKM: Smart Manufacturing Informatics
- CIE-17 SEIKM: Advanced Manufacturing for Bioeconomy and Circular Economy
- CIE-18 VES: Designing User Experiences for Virtual Environments
- CIE-19 VES: Virtual Systems for Engineering Applications
- CIE-20 VES: VES Show-and-Tell
- CIE-27 AI + ML Approaches for Engineering (General)

CIE JOINT TOPICS

- CIE-21 AMS-CAPPD: Digital Twin: Advanced Human
- Modeling and Simulation in Engineering
- CIE-22 AMS-SEIKM: Digital Twin Modelling and Analytics for Advanced Manufacturing
- CIE-23 AMS-SEIKM: Physics-Informed Machine Learning for Design and Advanced Manufacturing
- CIE-24 SEIKM-AMS: Artificial Intelligence and Machine Learning in Design and Manufacturing
- CIE-25 AMS-CAPPD-SEIKM: Design, Simulation and Optimization for Additive Manufacturing
- CIE-26 Graduate Student Poster Symposium

CIE SPECIAL SESSION

- VES: JCISE Spotlight Talks on Extended Reality in Design and Manufacturing

Selected papers will be published in ASME *Journal of Computing and Information Science in Engineering* (JCISE). Five Best Papers will be awarded, including CIE Conference Best Paper and AMS, CAPPD, SEIKM and VES Best Paper.

IDETC-CIE WORKSHOPS/TUTORIALS

Please consider the opportunity to submit a proposal for organizing a workshop or tutorial in ASME IDETC-CIE 2023. The submission form can be found at:

https://event.asme.org/IDETC-CIE/Program/Workshop-Tutorial-Proposals

CONFERENCE ORGANIZERS:

Conference Chair: Caterina Rizzi
University of Bergamo
Bergamo, Italy, caterina.rizzi@unibg.it

Program Chair: Robert Wendrich
Rawshaping Technology RBSO
The Netherlands, robert@rawshaping.com

IMPORTANT DATES

- SUBMISSION OF ABSTRACT FULL-LENGTH PAPER FOR REVIEW
  March 13, 2023
- PRESENTATION ONLY AND POSTER SUBMISSION
  April 10, 2023
- PAPER REVIEW COMPLETE
  April 17, 2023
- DRAFT PAPER AND PRESENTATION ONLY/POSTER EXTENDED ABSTRACT DECISION NOTIFICATION
  April 24, 2023
- SUMISSION OF COPYRIGHT FORM
  May 12, 2023
- FINAL PAPER SUBMISSION
  May 15, 2023

RELEVANT JOURNALS, CONFERENCES & JOURNALS SPECIAL ISSUES

JOURNAL OF COMPUTING AND INFORMATION SCIENCE IN ENGINEERING

The Journal of Computing and Information Science in Engineering publishes archival research results and advanced technical applications. The scope includes: Solid and Geometric Modeling; Computational geometry; Reverse Engineering; Virtual Environments and Haptics; Tolerance Modeling and Computational Metrology; Rapid Prototyping; Internet-Aided Design, Manufacturing and Commerce; Information Models and Ontologies for Engineering Applications; PDM/Enterprise Information Management; AI/Knowledge Intensive CAD/CAM; Engineering Simulation and Visualization, including FEA and Meshing; Creative IT; and Computational Algorithms/Software Development for mechanical product development.

http://computingengineering.asmedigitalcollection.asme.org/journal.aspx

ASME DIGITAL COLLECTION
THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

Founded in 1880 as the American Society of Mechanical Engineers, ASME is the premier professional membership organization for more than 127,000 mechanical engineers and associated members worldwide. ASME also conducts one of the world's largest technical publishing operations in the world, offering thousands of titles including some of the profession's most prestigious journals, conference proceedings, and ASME Press books.

The ASME Digital Collection, previously known as The ASME Digital Library, is ASME's repository of current and archival literature featuring:

- ASME's Transaction Journals from 1960 to present.
- ASME's Conference Proceedings from 2002 to present.

- ASME Press eBooks selected from 1993 to present.

http://asmedigitalcollection.asme.org/index.aspx

The International Mechanical Engineering Congress and Exposition (IMECE) is ASME's largest research and development conference focused primarily on mechanical engineering, but encompasses perspectives from many engineering disciplines. This year will be fully virtual and at IMECE one can experience stimulating innovation from basic discovery to translational application of new approaches and foster collaborations that engage stakeholders and partners not only from academia, but also from national laboratories, industry and government funding bodies. **During last years, initiatives have been shared between CIE and IMECE communities**, such the organization of 2020 IMECE Hackthon and support to the Track: Systems, Design and Complexity.

For further information see: https://event.asme.org/IMECE.

CIE NEWSLETTER EDITORIAL

ISSUE EDITOR

Krishnanand Kaipa

CONTRIBUTIONS

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