

CESUN 2023: 9TH INTERNATIONAL ENGINEERING SYSTEMS SYMPOSIUM (CESUN 2023)

PROGRAM AUTHORS KEYWORDS

PROGRAM

Days: [Monday, November 6th](#) [Tuesday, November 7th](#)

Monday, November 6th

View this program: [with abstracts](#) [session overview](#) [talk overview](#)

07:45-08:45

Breakfast and Registration

All activities except reception and dinner will take place at: Norris University Center (1999 Campus Drive, Evanston, IL 60208)

LOCATION: [Louis Room \(205\)](#)

08:45-09:00 Session 1

Opening address

CHAIRS: [Jitesh Panchal](#) and [Erica Gralla](#)

LOCATION: [Louis Room \(205\)](#)

09:00-10:30 Session 2

Panel 1: Designing Complex Systems for Uncertainty, Sustainability, and Resilience: The Case for Flexibility

Moderator: **Michel Cardin** (Associate Professor in Computational Aided Engineering at the Dyson School of Design Engineering, Imperial College London)

Panelists:

- **David Broniatowski** (Associate Professor of Engineering Management & Systems Engineering, The George Washington University)
- **Michel-Alexandre Cardin** (Associate Professor of Computational Aided Engineering, Dyson School of Design Engineering, Imperial College London)
- **Richard de Neufville** (Professor of Engineering Systems, Institute for Data, Systems and Society, MIT)
- **Tina Comes** (Professor of Technology, Policy and Management, TU Delft)
- **Zoe Szajnar** (Professor of Engineering Management & Systems Engineering, The George Washington University)

LOCATION: [Louis Room \(205\)](#)

10:30-11:00

Coffee Break

11:00-12:30 Session 3A

Systems and Modularity

CHAIR: [Daniel DeLaurentis](#)

LOCATION: [Louis Room \(205\)](#)

11:00 [Lauren Bateman](#) and [Erica Gralla](#)

Pushing the limits: Changing Organizational Structures in IFRC's Humanitarian Response Operations ([abstract](#))

PRESENTER: [Lauren Bateman](#)

11:18 [Taylan Topcu](#) and [Zoe Szajnfarber](#)

Navigating Cost, Schedule, and Performance Trade-offs through Co-Design of Modules and Interfaces ([abstract](#))

PRESENTER: [Taylan Topcu](#)

11:36 [Zoe Szajnfarber](#), [Taylan Topcu](#) and [Jitesh Panchal](#)

Theory-Grounded Guidelines for Solver-Aware System Architecting (SASA) ([abstract](#))

PRESENTER: [Zoe Szajnfarber](#)

11:54 [John Meluso](#) and [Laurent Hébert-Dufresne](#)

Multidisciplinary engineering coordination through collective artifacts ([abstract](#))

PRESENTER: [John Meluso](#)

11:00-12:30 Session 3B

Systems and Networks

CHAIR: [Zhenghui Sha](#)

LOCATION: [Big Ten Room \(104\)](#)

11:00 [Negin Maddah](#) and [Babak Heydari](#)

Platform-Driven Collaboration Patterns: Structural Evolution Over Time and Scale ([abstract](#))

PRESENTER: [Negin Maddah](#)

11:18 [Yinshuang Xiao](#), [Yaxin Cui](#), [Wei Chen](#), [Noshir Contractor](#) and [Zhenghui Sha](#)

Design for Market Systems Using Network-Based Product Competition Analysis ([abstract](#))

PRESENTER: [Yinshuang Xiao](#)

11:36 [John Caddell](#), [Anam Bayazid](#), [Roshanak Nilchiani](#) and [Paul Grogan](#)

Measuring the Emergent Informal Social Networks of Military Units with Varying Permanent Changes of Station: An Agent-Based Approach ([abstract](#))

PRESENTER: [John Caddell](#)

11:54 [Neelam Modi](#), [Jonathan Januar](#), [Johan Koskinen](#), [Zhenghui Sha](#), [Wei Chen](#) and [Noshir Contractor](#)
Social Influence and Customer Preferences: A Case Study in the U.S. New Car Buyer Market
(abstract)
PRESENTER: [Neelam Modi](#)

12:30-13:45

Lunch

LOCATION: [Louis Room \(205\)](#)

13:45-15:15 Session 4A

Systems Engineering and Design

CHAIR: [Alejandro Salado](#)

LOCATION: [Louis Room \(205\)](#)

13:45 [Alkim Avsar](#) and [Paul Grogan](#)
Intervention in Collaborative System Design for Mitigating Coordination Failure (abstract)
PRESENTER: [Alkim Avsar](#)

14:03 [Yiyi Wang](#), [Chenwei Gui](#) and [Kazuhiro Aoyama](#)
Quantify Project Rework to Improve Planning Efficiency in Project Scheduling (abstract)
PRESENTER: [Chenwei Gui](#)

14:21 [Aditya Singh](#) and [Zoe Szajnfarber](#)
Understanding the Tradeoffs Behind Using Margin for Changeability (abstract)
PRESENTER: [Aditya Singh](#)

14:39 [Joe Gregory](#) and [Alejandro Salado](#)
A Requirements Verification Ontology Stack to Support Semantic Systems Engineering
(abstract)
PRESENTER: [Joe Gregory](#)

13:45-15:15 Session 4B

Artificial Intelligence in Systems

CHAIR: [David Broniatowski](#)

LOCATION: [Big Ten Room \(104\)](#)

13:45 [Melik Ozolcer](#), [Mohammad Rahul Islam](#), [Abdullah Mohammed](#), [Tongze Zhang](#), [Sang Won Bae](#) and [Ting Liao](#)
Towards Designing Empathetic and Trustworthy AI Chatbots: An Exploratory Study (abstract)
PRESENTER: [Ting Liao](#)

14:03 [Qiliang Chen](#) and [Babak Heydari](#)
AI Driven Governance of Complex Systems Through Network Intervention: A Hierarchical RL Approach with Graph Neural Network
(abstract)
PRESENTER: [Qiliang Chen](#)

- 14:21 [David Broniatowski](#)
Can Requirements Engineering Be Used to Manage Systemic Bias in AI Systems?
([abstract](#))
- 14:39 [Philip Odonkor](#)
Generative Agent-Based Modeling: Simulating Social Dynamics With Large Language Models
([abstract](#))
- 14:57 [Chris Krueger](#), [Justine Manning](#), [Robert Pless](#) and [Zoe Szajnfarber](#)
All Models Fail, But Some Are Useful: Enabling Informed Decision-Making by Non-Expert Acquirers of AI-Embedded Systems ([abstract](#))
PRESENTER: [Chris Krueger](#)

15:15-16:15 Session 5

Posters and Coffee

LOCATION: [Louis Room \(205\)](#)

- [Beatrice Lambert](#) and [Darryl Farber](#)
Mission Engineering and Acquisition Modernization for Joint AI-Domain Command and Control ([abstract](#))
PRESENTER: [Beatrice Lambert](#)
- [Athul Chakkithara Dharmarajan](#), [Vikranth Sagar Reddy Gadi](#), [Oladele Adeyeye](#), [Taylan Topcu](#), [Jitesh Panchal](#) and [Zoe Szajnfarber](#)
A Function Selection-Based Framework for Representing Extreme Novelty in Models of Design Processes ([abstract](#))
PRESENTER: [Athul Chakkithara Dharmarajan](#)
- [Zihan Wang](#), [Weikang Xian](#), [Ying Li](#) and [Hongyi Xu](#)
Embedding Physical Knowledge in Deep Neural Networks for Predicting Metamaterial Phononic Properties ([abstract](#))
PRESENTER: [Hongyi Xu](#)
- [Zaid Kbah](#) and [Erica Gralla](#)
Disaster Information processing and extraction using ChatGPT ([abstract](#))
PRESENTER: [Zaid Kbah](#)
- [Lei Shen](#) and [Kazuhiro Aoyama](#)
A Proposal of Multi-agent Modeling Approach in SPS Line Simulation Considering Human Centered Design ([abstract](#))
PRESENTER: [Lei Shen](#)
- [Michael Saidani](#) and [Harrison Kim](#)
THE UTILITY OF AI AND ML TOOLS TO DESIGN SUSTAINABLE PRODUCT AND PRODUCTION SYSTEMS: REVIEW, APPLICATIONS AND LIMITATIONS ([abstract](#))
PRESENTER: [Harrison Kim](#)
- [Danielle Prezioso](#) and [Philip Odonkor](#)
An agent-based model for energy justice and technology adoption in the residential building sector ([abstract](#))

PRESENTER: [Danielle Prezioso](#)

[Huaxia Zhou](#), [Mengyi Sun](#) and [Luís Amaral](#)

**Investigation of External Shock on Science System:
A Case Study on German Science System** ([abstract](#))

PRESENTER: [Huaxia Zhou](#)

[Christine King](#) and [Tugba Karabiyik](#)

Desertification: An Agent-Based Model ([abstract](#))

PRESENTER: [Christine King](#)

[Sang Won Bae](#) and [Feng Liu](#)

**Preference Detection Harnessing Low-Cost Portable
Electroencephalography and Facial Behavior
Markers** ([abstract](#))

PRESENTER: [Sang Won Bae](#)

[Xingang Li](#) and [Zhenghui Sha](#)

**Revolutionizing Computer-Aided Design Systems:
CAD Sequence Inference from Product Image**
([abstract](#))

PRESENTER: [Xingang Li](#)

[Rachel Dzieran](#), [Lirim Ashiku](#), [Richard Threlkeld](#), [Cihan Dagli](#) and [Robert Marley](#)

**Fuzzy Associative Memory and Deep Learning
Network Model Interface with Transplant Surgeon in
Assessing Hard-to-Place Kidneys for Use in Digital
Twin Model** ([abstract](#))

PRESENTER: [Rachel Dzieran](#)

[Qian Shi](#), [Yinchien Huang](#) and [Daniel DeLaurentis](#)

**A game theoretic agent-based framework for
distributed space systems planning** ([abstract](#))

PRESENTER: [Qian Shi](#)

[Casey Eaton](#), [August Longhurst](#), [Kelly Campo](#) and
[Bryan Mesmer](#)

**How Should Technical Measures Be Selected? An
Investigation Into Published Guidance** ([abstract](#))

PRESENTER: [Casey Eaton](#)

[Dalia Bekdache](#) and [Daniel DeLaurentis](#)

**Developing a digital mission engineering
framework: Bridging the gap between current
practices and digital-enabled mission engineering
solutions** ([abstract](#))

PRESENTER: [Dalia Bekdache](#)

[Waterloo Tsutsui](#) and [Dan DeLaurentis](#)

**Integrating Aerospace Structural Mechanics
Problems into System-of-Systems Engineering
Education: Fostering Interdisciplinary Learning**
([abstract](#))

PRESENTER: [Waterloo Tsutsui](#)

[Prajwal Balasubramani](#) and [Daniel DeLaurentis](#)

**Using Ensemble Explanations to Model and
Understand System Interactions** ([abstract](#))

PRESENTER: [Prajwal Balasubramani](#)

[David Perner](#) and [Bryan Mesmer](#)

Category theory concepts for systems engineering
([abstract](#))

PRESENTER: [David Perner](#)

[Vikranth S. Gadi](#), [Oladele Adeyeye](#), [Athul Chakkithara Dharmarajan](#), [Taylan G. Topcu](#), [Zoe Szajnfarder](#) and [Jitesh H. Panchal](#)

Heuristics for Solver Aware Systems Architecting (SASA): A Reinforcement Learning Approach ([abstract](#))

PRESENTER: [Vikranth S. Gadi](#)

[Mohammad Rahul Islam](#) and [Sang Won Bae](#)

MicroFlow: Advancing Affective States Detection in Learning through Micro-expressions ([abstract](#))

PRESENTER: [Mohammad Rahul Islam](#)

[Mitchell Kirshner](#)

A Multi-Tiered Methodology for Systems Engineering Graduate Research ([abstract](#))

[Weijie Pan](#) and [Ekundayo Shittu](#)

Assessment of mobility decarbonization with low-carbon policies and EV incentives in the US ([abstract](#))

PRESENTER: [Weijie Pan](#)

[Tianye Wang](#) and [Ekundayo Shittu](#)

Can the Inflation Reduction Act Inflate the Effectiveness of Electric Vehicle Incentives? ([abstract](#))

PRESENTER: [Tianye Wang](#)

[Sonali Sinha Roy](#), [Cesare Guariniello](#) and [Daniel DeLaurentis](#)

A State-based Probabilistic Risk Assessment Framework for System-of-Systems Operations ([abstract](#))

PRESENTER: [Sonali Sinha Roy](#)

16:15-17:15 Session 6

Keynote I: Optimizing Production for New Energy Products

Jason Crusan (VP New Energy Solutions, Woodside Energy)

LOCATION: [Louis Room \(205\)](#)

17:30-20:30

Reception and Dinner at James L. Allen Center

Address: 2169 Campus Drive, Evanston, IL, 60208

Cocktail hour: EMP 24 25 Lounge 1st Fl North

Dinner: Atrium Dining Room

Tuesday, November 7th

View this program: [with abstracts](#) [session overview](#) [talk overview](#)

07:30-08:45

Breakfast and Registration

LOCATION: [Louis Room \(205\)](#)

07:30-08:45

CESUN University Representatives Breakfast (Invitation only)

LOCATION: [Rock Room \(207\)](#)

08:45-09:45 Session 7

Keynote II: Conditions favoring the effective generation and communication of new ideas in science

Brian Uzzi (Richard L. Thomas Professor of Leadership at the Kellogg School of Management, Northwestern University)

and

Daniel Abrams (Professor of Engineering Sciences and Applied Mathematics in Northwestern University's McCormick School of Engineering and co-director of NICO)

LOCATION: [Louis Room \(205\)](#)

09:45-11:15 Session 8A

Decision Making in Systems

CHAIR: [Bryan Mesmer](#)

LOCATION: [Louis Room \(205\)](#)

09:45 [Soumyakant Padhee](#) and [Babak Heydari](#)

The Echo Chamber of Complexity: An Experimental Study on the Influence of Design Complexity on Groupthink and Innovation
([abstract](#))

PRESENTER: [Soumyakant Padhee](#)

10:03 [Christopher White](#) and [Bryan Mesmer](#)

Exploring Expectations and Probabilities of Superiority in Low Repetition Problems
([abstract](#))

PRESENTER: [Christopher White](#)

10:21 [Yu Ohno](#), [Akihiko Nishino](#) and [Naohiko Kohtake](#)

Proposal of Vehicle-Mounted Driving and Disaster (D2) Recorder System for Enhancing Post-Disaster Situational Awareness ([abstract](#))

PRESENTER: [Yu Ohno](#)

10:39 [Ambrosio Valencia-Romero](#) and [Paul T. Grogan](#)

The Strategy Dynamics of Collective Systems
([abstract](#))

PRESENTER: [Ambrosio Valencia-Romero](#)

09:45-11:15 Session 8B

Infrastructure and Resilience

CHAIR: [Darryl Farber](#)

LOCATION: [Big Ten Room \(104\)](#)

09:45 [Priscila Silva](#) and [Lance Fiondella](#)

Tracking and Predicting System Resilience
([abstract](#))

PRESENTER: [Priscila Silva](#)

10:03 [Kathryn Gilligan](#), [Lauren Bateman](#) and [Erica Gralla](#)

Evaluating Strategies and Organization Designs for Humanitarian Information Management ([abstract](#))

PRESENTER: [Kathryn Gilligan](#)

10:21 [Qian Shi](#), [Rodrigo Schmitt](#), [Tram Thu Dang](#), [Cesare Guariniello](#), [Joyce Main](#) and [Daniel DeLaurentis](#)

A System Dynamics Model on STEM Retention
([abstract](#))

PRESENTER: [Qian Shi](#)

10:39 [Robert M. Baker](#), [Megan C. Marcellin](#), [Robert J. Riggs](#), [T. Donna Chen](#), [Daniel C. Hendrickson](#), [Negin Alemazkoo](#), [Thomas L. Polmateer](#) and [James H. Lambert](#)

Optimizing Charging Infrastructure for Electric Vehicles at Maritime Ports ([abstract](#))

PRESENTER: [James H. Lambert](#)

10:57 [Lisa Aultman-Hall](#), [Jonathan Dowds](#), [Sarah Howerter](#) and [Paul Hines](#)

Systems Modeling of Electric Vehicle Energy Demand and Regional Electricity Generation for New York and New England ([abstract](#))

PRESENTER: [Lisa Aultman-Hall](#)

11:15-11:30

Coffee break

11:30-12:45 Session 9

Panel 2: Network Methods for Multi-Agent Sociotechnical Systems

Moderator: **Babak Heydari** (Associate Professor in the Department of Mechanical and Industrial Engineering, Northeastern University)

Panelists:

- **Noshir Contractor** (Jane S. & William J. White Professor of Behavioral Sciences, McCormick School of Engineering, Northwestern University)
- **Paul Grogan** (Associate Professor, School of Computing and Augmented Intelligence, Arizona State University)
- **John Meluso** (Sloan VERSO Postdoctoral Fellow for Systems, Organizations, and Inclusion at the Vermont Complex Systems Center, The University of Vermont)

LOCATION: [Louis Room \(205\)](#)

12:45-14:00

Lunch, Awards, and Closing

LOCATION: [Louis Room \(205\)](#)

14:00-15:30

[Optional] Tour of the Segal Design Institute and Atlas Lab
(pre-registration required)

Leaves from Norris University Center.

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