

Christopher McComb, PhD

Professor of Mechanical Engineering
Director, Human+AI Design Initiative
Carnegie Mellon University

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LOCATION
Pittsburgh, PA, USA

Education



Carnegie Mellon University

2012–2016

Ph.D., Mechanical Engineering

2016

*Dissertation: Designing the Characteristics of Design Teams
via Cognitively-Inspired Computational Modeling*
Advisors: Jonathan Cagan and Kenneth Kotovsky

M.S., Mechanical Engineering

2014



California State University, Fresno

2007–2012

B.S., Civil Engineering

2012

Thesis: Enhancement of Composite Concrete Decks
Advisor: Fariborz M. Tehrani

B.S., Mechanical Engineering

2012

Current and Former Positions

2026 – Present

Professor, Carnegie Mellon University, Pittsburgh, PA

Professor in the Department of Mechanical Engineering, Director of the Human+AI Design Initiative, courtesy faculty in Civil & Environmental Engineering, faculty affiliate of the NextManufacturing Center, Manufacturing Futures Institute, Wilton E. Scott Institute for Energy Innovation, and Block Center for Technology and Society.

2021 – 2026

Associate Professor, Carnegie Mellon University, Pittsburgh, PA

Gerard G. Elia Associate Professor in the Department of Mechanical Engineering, Director of the Human+AI Design Initiative, courtesy faculty in Civil & Environmental Engineering, faculty affiliate of the NextManufacturing Center, Manufacturing Futures Institute, Wilton E. Scott Institute for Energy Innovation, and Block Center for Technology and Society.

2017 – 2021

Assistant Professor, The Pennsylvania State University, University Park, PA

Assistant Professor in the School of Engineering Design, Technology, and Professional Programs, Courtesy appointments in Mechanical Engineering and Industrial Engineering, and faculty affiliate of the Stuckeman Center for Design Computing and the Institute for Computational and Data Sciences.

2016 – 2017

Adjunct Instructor, Carnegie Mellon University, Pittsburgh, PA

Adjunct Instructor with the Integrated Innovation Institute, teaching Integrated Product Conceptualization and Grand Challenge Innovation.

2016 – 2017

Postdoctoral Researcher, Carnegie Mellon University, Pittsburgh, PA

Postdoctoral Researcher in Integrated Design Innovation Group working on computational modeling of engineering design teams.

Consulting

2025 – 2026

Go Green Global Technologies Corp. (GOGR), Danbury, CT

Board of Advisors / Senior AI Strategist: Advising on AI/ML architecture, governance, and product strategy for autonomous water and fuel treatment systems.

2025 – 2026

Cargill, Minneapolis, MN

Invited presentation and hands-on breakout sessions on practical human-AI teaming for industrial engineering and construction.

2026

MNR Innovations, San Jose, CA

Advising on CAD-to-procedural reconstruction and paired-data generation for language-model training.

2025

University of Texas at Austin, Austin, TX

Developed an open-source retrieval-augmented generation toolkit for Canvas and Piazza course data for the NSF EDGE project.

Teaching and Education

Courses Taught at CMU

* New core undergraduate course

** New special topics graduate course

*** Course taught at CMU before initial faculty appointment

Course	Course Title	Units	Class	Offered	Enrollment	Resp.	Course FCE	Instr. FCE
24-441	Product Design	12	Senior	Spring 2026	23	21	3.9	3.5
24-679	Special Topics: Designing and Deploying AI/ML Systems**	12	Graduate	Fall 2025	37	20	4.90	4.85
24-262	Mechanics II: 3D Design* (co-taught with B. Aksak)	10	Soph	Spring 2025	131	55	3.7	4.0
24-262	Mechanics II: 3D Design*	10	Soph	Spring 2024	139	88	4.1	4.3
24-262	Mechanics II: 3D Design*	10	Soph	Spring 2023	106	63	4.4	4.6
24-679	Special Topics: Designing and Deploying AI/ML Systems**	12	Graduate	Fall 2022	29	19	4.7	4.7
24-679	Special Topics: Designing and Deploying AI/ML Systems**	12	Graduate	Fall 2021	12	10	4.7	4.7
49-850	Grand Challenge Innovation*** (co-taught with J. Cagan)	12	Graduate	Spring 2017	6	6	5.0	4.8
49-300	Integrated Product Conceptualization***	12	Junior	Fall 2016	16	11	4.8	5.0

Courses Taught at The Pennsylvania State University

Evaluations conducted on a 7-point scale (1 low, 7 high). Scores prior to Summer 2020 are averages over student responses; scores after Summer 2020 are medians.

* Course developed or significantly revised

Course	Course Title	Units	Class	Offered	Enrollment	Resp.	Course FCE	Instr. FCE
DS 440	Data Science Capstone	3	Senior	Spring 2021	42	5	6	6
EDSGN 561	Data Driven Design*	3	Graduate	Spring 2021	20	17	7	7
EDSGN 100	Cornerstone Engineering Design	3	First-year	Fall 2020	32	24	7	7
EDSGN 460	Multidisciplinary Capstone	3	Senior	Fall 2020	21	14	7	7
EDSGN 561	Data Driven Design*	3	Graduate	Spring 2020	18	14	6.72	6.92
EDSGN 100	Cornerstone Engineering Design	3	First-year	Fall 2019	30	28	6.00	6.81
EDSGN 460	Multidisciplinary Capstone	3	Senior	Fall 2019	22	13	6.73	6.82
EDSGN 270	Summers by Design	3	Sophomore	Summer 2019	16	1	7.00	7.00
EDSGN 100	Cornerstone Engineering Design	3	First-year	Spring 2019	23	19	6.42	7.00
EDSGN 460	Multidisciplinary Capstone	3	Senior	Spring 2019	28	15	5.40	6.00
EDSGN 100	Cornerstone Engineering Design	3	First-year	Fall 2018	29	26	5.88	6.69
EDSGN 549	Design Decision Making*	3	Graduate	Fall 2018	25	18	6.22	6.61
EDSGN 270	Summers by Design	3	Sophomore	Summer 2018	14	12	6.58	7.00
EDSGN 100	Cornerstone Engineering Design	3	First-year	Spring 2018	31	15	5.60	6.13
EDSGN 549	Design Decision Making*	3	Graduate	Spring 2018	10	10	6.80	7.00
EDSGN 100	Cornerstone Engineering Design	3	First-year	Fall 2017	20	20	5.90	6.55

Student and Trainee Mentorship

Underlined names identify advisees; inline marks indicate their institution at the time:  Carnegie Mellon,  Penn State,  Politecnico di Milano, and  Tsinghua University.

Undergraduate Students

- U23. Aeka Chatra , "Review of the State-of-the-Art in AI Battery Design," May 2025 – May 2026.
- U22. Jason Pohl , "Benchmark Dataset of Simulations for Vision Language Models," May 2025 – May 2026.
- U21. Abigail Beyene , "Predictive structural model to optimize modular structures using a production system," May 2025 – August 2025.
- U20. Regan Hamilton , "Assessing the Impact of an AI Tutee," May 2025 – August 2025.
- U19. Marianne Baiden , "Lost in Collaboration: Inferring Shared Understanding through Design Team Conversations," August 2024 – May 2025.
- U18. Megan Ying , "Using AI Agents to Aid in Sustainable Material Selection," August 2024 – May 2025.
- U17. Samantha Der , "Automated Design of Wave Energy Devices," August 2024 – May 2025.
- U16. Kai Herchenroether , "Shared turn taking in engineering design teams," March 2024 – May 2025.
- U15. Rachel Shockley , "Shared turn taking in engineering design teams," March 2024 – May 2025.
- U14. Ehinomen Omomhenle , "Analyzing Opportunities for Additive Manufacturing in Rwanda," May 2024 – August 2024.
- U13. Maxime Mermillod-Blondin , "A Comparative Review of Lattice Design Software for Additive Manufacturing," August 2023 – May 2024.
- U12. Doreen Valmyr , "A functional modeling approach for the conceptual design of AI/ML-based cyber-physical products," August 2023 – May 2024.
- U11. Oscar Jin  (Tsinghua University, virtual), "Rapid Thermal Simulations of Additive Manufacturing," March 2023 – December 2023.
- U10. Allison Weller , "Multi-Objective Data-Driven Optimization of Satellite Internet Constellations," May 2023 – August 2023.
- U9. Dillon Ma , "Physical Evaluation of Additively Manufactured Lattice Transition Regions," May 2023 – August 2023.
- U8. Ben Gu , "Rapid Thermal Simulations of Additive Manufacturing," May 2023 – August 2023.
- U7. Melody Chu , "Generalized Training for Material Handling Shop Floor Robots," May 2022 – September 2022.

- U6. Venkata Bandaru , “Implementing a Web-Based Application to Support Researchers in Improving the Diversity of Their Citations,” August 2020 – May 2022.
- U5. Matthew Li , “Using physics-informed generative adversarial networks to enhance multiphase fluid flow simulation,” June 2018 – May 2021.
- U4. Emmeline Evans , “Design and Development of PLA Clave Prototypes as Alternatives to Wooden Claves,” August 2017 – May 2021.
- U3. Emmett Meinzer , “How Might We Automate the Generation of How-Might-We Questions: Computational Creativity in the Design Thinking Process,” May 2019 – May 2021.
- U2. Justin Pierce , “Physics-Informed Neural Networks: Steady State and Transient Thermal Analysis with Application in Metal Laser Power Bed Fusion,” August 2020 – May 2021.
- U1. Christian Murphy , “Deep Learning for Additive Manufacturing Analysis,” December 2017 – May 2019.

Master's Students

- M28. Mayank Dixit , (MSAIE-ESTP), “AI-Enabled Engineering Systems and Technology Policy,” August 2026 – Present.
- M27. Anshika Agarwal , (MIIPS), “See One, Do One, Teach AI: Supporting Mastery and Self-Efficacy Through AI-as-a-Tutee,” February 2026 – July 2026.
- M26. Sam Green , “Semantic Video Compression for Manufacturing Process Analysis,” January 2026 – Present.
- M25. Cassie Li , (Computational Design, School of Architecture), “AI-Assisted Computational Design Workflows,” August 2025 – Present.
- M24. Mary Manru Zhang , (Computational Design, School of Architecture), “Engineered for Precision: Experimentally Linking Query Characteristics to Response Precision in Language Models,” August 2025 – Present.
- M23. Zach Zdobinski , “DesignBench: Benchmarking AI for Engineering Design,” January 2026 – June 2026.
- M22. Manasi Mehta , (MIIPS), “Benchmark Dataset of Simulations for Vision Language Models,” May 2025 – December 2025.
- M21. Sohyun Jin , (Computational Design, School of Architecture; co-advised with Daniel Cardoso-Llach and Daragh Byrne), “Minimal Making Grammars,” September 2024 – May 2025.
- M20. Manali Badwe , “Automated Cleanup of 3D Scans,” August 2024 – May 2025.
- M19. Leyi Zhang , (MIIPS), “Creating visualizations of engineering design datasets,” May 2024 – May 2025.
- M18. Giovannia Natasha , (MIIPS), “Exploring LLM-enabled approach to learning,” May 2024 – May 2025.
- M17. Yimika Osunsanya , (MIIPS), “Creating Service Blueprints for Material Selection in Architectural Engineering,” May 2024 – May 2025.
- M16. Vasvi Agarwal , “Data-Driven Design of Cyber-Physical Systems,” August 2023 – May 2025.
- M15. Mariam Sulleiman , “Analyzing Opportunities for Additive Manufacturing in Rwanda,” May 2024 – January 2025.
- M14. Yash Patrawari , “Large Language Models for Material Selection,” September 2022 – May 2024.
- M13. Francisco Boschetti , (co-advised with Jonathan Cagan), “Simulating Personality in Design Teams,” January 2021 – August 2023.
- M12. Chloe Hong , (Computational Design, School of Architecture; co-advised with Daniel Cardoso-Llach), “Design Automation and Synthesis in Architecture, Engineering, and Construction,” September 2022 – May 2023.
- M11. Mathew Thomson , (co-advised with Noelia Grand Gutierrez), “Image Super-Resolution for Engineering Analyses,” September 2021 – May 2023.
- M10. Zeda Xu , (MechE and ETIM), “Probabilistically-Informed Neural Networks for Forecasting Stock Market Volatility,” May 2022 – December 2022.
- M9. Sierra Hicks , “Sociotechnical Systems Simulation and Predictive Modeling of Arctic Communities,” May 2020 – August 2022.
- M8. Fariha Azhar , (co-advised with Matthew Parkinson), “ASHE: An Agent-Based Model that Simulates Human Error Probability Using Design Structure Matrices,” August 2020 – August 2022.
- M7. Lucas Puentes , (co-advised with Jonathan Cagan), “Cooperative Heuristics-Driven Design Agent Teams,” August 2017 – July 2022.
- M6. Nicholas Holowsko , “Multi-Objective Model-Based Optimization of Pilot Decision Making for Urban Air Mobility,” August 2020 – August 2021.
- M5. Siddharth Jhawar , (co-advised with Jared Butler), “Considering Thickness in Cylindrical Developable Mechanisms,” August 2020 – August 2021.
- M4. Akash Agrawal , “Towards computationally efficient reinforcement learning frameworks for the design of cyber-physical systems,” September 2019 – June 2021.
- M3. Pranav Khanolkar , (co-advised with Saurabh Basu), “Deep Image Colorization for Rapid Materials Analysis,” May 2019 – May 2020.

- M2. Jacob Kintner , “Application of Deep Image Colorization to Predict Microstructure-Dependent Temperature Distributions,” August 2019 – May 2020.
- M1. Samuel Lapp  (co-advised with Kathryn Jablokow), “Designing Like a Human: Simulating Cognitive Style in Teamwork with an Agent-Based Model,” May 2018 – May 2019.

Ph.D. Students

- P18. Junlin Zhou  (Mechanical Engineering; co-advised with Andrew Spielberg), August 2026 – Present.
- P17. George Tang  (Mechanical Engineering; co-advised with Ryan Johnson), August 2026 – Present.
- P16. Chenrui Xu  (Civil & Environmental Engineering; co-advised with Burcu Akinci), “Agentic AI Applications in Construction Engineering,” August 2025 – Present.
- P15. Chan-Eui Song  (co-advised with Jeremy Michalek), “Agentic Design of Energy Storage Systems,” August 2025 – Present.
- P14. Aslan Noorghasemi  , “Agent-based Modeling of Community Resilience in Alaska,” June 2023 – Present.
- P13. Zeda Xu  (co-advised with Nikolas Martelaro), “Boundary Objects in Human-AI Collaboration,” January 2023 – Present.
- P12. Jessica Ezemba  (co-advised with Conrad Tucker), “Democratizing Engineering Design,” August 2023 – Present.
- P11. Wenzhuo Xu  (co-advised with Noelia Grand-Gutierrez), “Super-Resolution for Engineering Analyses,” August 2022 – Present.
- P10. Elizabeth (Scotty) McGee  (co-advised with Jonathan Cagan), “Generalizable AI Agent for Engineering Design Teams: Learning Interaction Patterns from Process Data,” August 2022 – July 2026.
- P9. Martha Baldwin  , “Explorations in Lattice Latent Space: Multi-Lattice Design for Geometry, Performance, and Manufacturability,” August 2021 – December 2025, currently Computational Geometry Senior Software Engineer at Re:Build Manufacturing.
- P8. Akash Agrawal  , “Multi-fidelity reinforcement learning frameworks for the design of cyber-physical systems,” August 2021 – August 2024, currently R&D Engineer II at Ansys.
- P7. Noriana Radwan  , “Investigating the Impact of Cognitive Style and Coping in Engineering Design: Insights from Computational Modeling and Cognitive Experiments,” August 2019 – May 2023, currently UX Researcher at JPMorganChase.
- P6. Sean Rismiller  (co-advised with Jonathan Cagan), “Applications of Reinforcement Learning to Management of Design Teams,” August 2018 – May 2023.
- P5. Glen Williams  , “Towards the Next Generation of Engineering Design Artificial Intelligence: A Framework for Additive Manufacturing Machine Learning Development,” August 2018 – May 2022, currently Director of Artificial Intelligence at Re:Build Manufacturing.
- P4. Hannah Nolte  , “Cognitive Stress and Engineering Design: Investigating the Effect of State Mindfulness-Based Interventions on the Experience of Introductory Engineering Students,” August 2019 – May 2022, currently Lead Human-Centered Systems Engineer at MITRE.
- P3. Ayush Raina  (co-advised with Jonathan Cagan), “Towards Deep Learning Guided Search Agents for Sequentially-Generative Design Problems,” August 2017 – May 2022, currently Senior Machine Learning Researcher at Playstation.
- P2. Torsten Maier  (co-advised with Jessica Menold), “An Exploration of Cognitive Assistants and Their Challenges,” June 2018 – June 2021, currently Assistant Professor at Kettering University.
- P1. Harshika Singh  (co-advised with Gaetano Cascini), “Computational Studies for Artificially Simulating Human Collaboration in Design Teams,” May 2019 – June 2021, currently Business Data Analyst at Caterpillar.
- P0. Mohammad AlSager AlZayed  (co-advised with Scarlett Miller), “An Exploration of the Role of Empathy in Engineering Design Education,” July 2018 – August 2020, currently Assistant Professor at Kuwait University.

Postdoctoral Researchers

- PD6. Jiangce Chen  (co-advised with Sneha Narra), “Multi-scale Fusion-based Metal Additive Manufacturing Optimization,” January 2023 – March 2025, currently Research Scientist at New York University.
- PD5. Akash Agrawal  , “Grammar-Based Design via Large Language Models,” August 2024 – February 2025, currently R&D Engineer II at Ansys.
- PD4. Ambrosio Valencia-Romero  , “Methods for Opportunity Identification in Artificial Intelligence, Machine Learning, and Data Analytics Applications,” October 2021 – August 2022, currently Assistant Professor at Old Dominion University.
- PD3. Malena Agyemang  , “Emergent Bias in Complex Decision-Making,” January 2021 – April 2022, currently Staff Researcher at the Institute for Defense Analysis.
- PD2. Binyang Song  , “Assessing Patterns Activity in AI-Enabled Design Teams,” September 2019 – September 2021, currently Assistant Professor at Nanyang Technological University.
- PD1. Nicolas Soria Zurita  , “Experimentation on Structures and Modalities of AI-Enabled Design Teams,” August 2019 – August 2021, currently Assistant Teaching Professor at The Pennsylvania State University.

Educational Contributions

New Special Topics Graduate Course: “Designing and Deploying AI/ML Systems”

This course was designed to fill an extant gap in artificial intelligence (AI) and machine learning (ML) education in the Department of Mechanical Engineering. Namely, there is a substantial set of courses that address theoretical and applied aspects of AI/ML, and a set of courses that address the design of products and systems. However, there are no courses that bridge these two disciplines to give students practical methods for designing AI/ML products, services, and systems for actual use.

Towards that end, this course introduces a variety of practical considerations for the design and deployment of engineered systems that make use of AI and ML. The course begins with lectures, assignments, and activities to establish a shared, hands-on understanding of design methods and common machine learning algorithms. Building on that shared understanding, topics include ethical concerns for AI/ML products and services, co-design with stakeholders, low-fidelity prototyping of computational systems, considerations for cloud and edge computing, using industry-scale ML platforms, and business models for AI/ML products and services. A final team-based project challenges students with designing and deploying an AI/ML system that responds to specific stakeholder needs.

Learning objectives included:

1. Rapidly create and evaluate interfaces for machine learning models.
2. Employ automated machine learning to rapidly train machine learning models.
3. Utilize pre-trained models as components in larger systems.
4. Find opportunities for creating products/services that leverage artificial intelligence or machine learning.
5. Determine and formalize requirements for the successful fulfillment of those opportunities.
6. Conceptualize and compare potential AI/ML solutions that respond to requisite requirements.
7. Instantiate, compose, and test AI/ML solutions to verify that requirements are met.

New Core Undergraduate Course: “Mechanics II: 3D Design”

With support from the Undergraduate Education Committee and other department stakeholders, this course was designed to address another gap: the need for a more cohesive hands-on design experience across the curriculum. This is the second course in a three-semester sequence that integrates the principles of mechanics with hands-on projects that have students apply those principles in a design context. Students extend their foundation in 2D statics to the analysis of 3D engineering systems, including determination of reactions at connections and internal loads. Friction, shear stress, and shear strain are introduced, followed by a study of stresses and deformation in torsion, and extensions to multiaxial and combined stresses. Altogether, students will learn to express ideas in sketches, interpret and create engineering drawings, model detailed shapes with CAD tools, analyze product performance with CAE tools, choose materials and manufacturing schemes, and create and test prototypes.

Students progress through three design experiences during the course:

1. The first design experience is conducted during the first week of class and requires students to repeat a 2D design project from the prior semester with the addition of an out-of-plane load. The assignment is primarily assessed based on documentation of process and is used to motivate discussion of subsequent mechanics topics.
2. The second design experience is conducted during the first half of the semester and requires students to design a bicycle crank to fail at a pre-determined load while minimizing the weight of the crank. Teams are constrained to use acrylic sheet and a limited amount of 3D-printed polymer, and use a combination of hand calculations, finite element analysis, and physical prototyping and testing to arrive at a solution. This project is assessed primarily based on application of mechanics principles and is used to motivate discussion of subsequent design and mechanics topics.
3. The third design experience is conducted during the second half of the semester and requires students to design a statically-loaded part that addresses a human need. This provides an entry point for discussion of human-centered design as students engage with users, define their own set of requirements, and use their mechanics and design knowledge to produce a functional solution. Topics of design for manufacturing, design for cost, and design for the environment are also introduced.

Learning objectives included:

1. Analyze the three-dimensional mechanical behavior of parts and assemblies under a variety of loading conditions.
2. Design mechanical parts to fulfill specific performance requirements.
3. Prototype, test, and evaluate potential solutions using a variety of both digital and physical methods.
4. Collaborate with other engineering students while designing, constructing, and testing solutions.
5. Communicate engineering concepts and solutions to both technical and nontechnical audiences.

Struminger Junior Faculty Fellowship: “Physical Manipulatives for More Effective and Equitable Mechanics Education” (2023--2024)

The objective of this initiative was to enhance second-year mechanics education through the introduction of physical manipulatives to illustrate core concepts. Physicals manipulatives are objects that support learning by demonstrating challenging concepts. These learning aids have been shown to improve concept retention and may also enhance confidence.¹ The initiative specifically proposed the creation of Mechanics Manipulative Kits (MMKs) containing physical manipulatives customized to the second-year mechanics education in the Department of Mechanical Engineering.

Generative AI Teaching and Research Fellowship: “Does the use of Generative AI as a Tutee increase learners’ self-efficacy and mastery of key concepts in a core undergraduate mechanical engineering course?”

The adage “see one, do one, teach one” has shown success across a variety of technical fields. However, it can be challenging to allocate time and resources to the final stage, in which learners teach the skill that they have recently acquired to a novice tutee. In order to allow this approach to scale more effectively, I demonstrated the use of Microsoft Copilot (a university-approved tool that utilizes GPT-4 and DALL-E3) as a readily available tutee for learners of all stages. The new teaching strategy entails guiding learners through a process in which they “teach” a deep technical skill to Microsoft Copilot. Guidance is designed to ensure that students engage with this activity in a way that deepens their own understanding as well.

Publications

Underlined names indicate students and postdocs advised or co-advised by Christopher McComb; inline university marks show affiliation at the time:  Carnegie Mellon,  Penn State, and  Politecnico di Milano.

† Postdoctoral researchers are marked with a dagger.

Journal Papers

- J118 Cassie Li  and Christopher McComb. Interaction Dynamics in LLM-to-LLM Design Ideation: An Analysis Across Model Families and Sizes, 2026. *Submitted to Journal of Computing and Information Science in Engineering.*
- J117 E. S. McGee , E. R. Brubaker, J. Cagan, and C. McComb. A Mixed-Methods Study of the Impact of an AI Coach on Teamwork in a NASA Design Sprint, 2026. *Submitted to Design Science.*
- J116 J. Ezemba , J. Pohl , C. Tucker, and C. McComb. OpenSeeSimE: A Large-Scale Benchmark to Assess Vision-Language Model Question Answering Capabilities in Engineering Simulations, 2026. *Submitted to Communications Engineering.*
- J115 A. Noorghasemi , Y. Xiao, Z. Sha, M. Xiao, and C. McComb. Agent-Based Modeling for the Evaluation of Community Resilience In Silico, 2026. *Submitted to Engineering Reports.*
- J114 J. Ezemba , C. McComb, and C. Tucker. Closed-Source Model Deprecation and the Reproducibility of Machine Learning Research, 2026. *Submitted to Nature Machine Intelligence.*
- J113 M. Zhang , A. Fisher, R. Engelbeck, and C. McComb. Engineered for Precision: Experimentally Linking Query Characteristics to Response Precision in Language Models, 2026. *Submitted to Journal of Mechanical Design.*
- J112 L. Alessa, S. K. Moon, R. A. Barbato, J. Brandenberger, A. D. Kliskey, and C. McComb. Going Viral: Changing Operating Parameters, Permafrost, and Pathogens—A Synthesis of Two Interdisciplinary Workshops, 2026. *Submitted to Joint Force Quarterly.*
- J111 A. Noorghasemi , S. Hicks , and C. McComb. PiperABM: A Python Library for Resilience-Based Agent Modeling, 2026. *Submitted to Journal of Open Source Software.*
- J110 Yuval Kahlon, Christopher McComb, and Haruyuki Fujii. Can AI Help us Navigate Architectural Design Research? Classifying Academic Literature using Machine Learning, 2026. *Submitted to Artificial Intelligence for Engineering Design, Analysis and Manufacturing.*
- J109 Y. Kahlon, C. McComb, and H. Fujii. Towards a General Taxonomy of Design Computing Research: A Cross-Conference Analysis of Research Questions in Recent Proceedings, 2026. *Submitted to Design Science.*
- J108 Yuval Kahlon, Christopher McComb, Roman Lukyanenko, Toshihiro Osaragi, and Haruyuki Fujii. What does this Tool do? Classifying Software Tools that Support Designing, 2026. *Submitted to Designing.*
- J107 E. S. McGee , C. McComb, and J. Cagan. Real-Time AI Facilitation of Team Interaction: A Combined Collective Intelligence and Interaction Dynamics Notation Approach, 2026. *Submitted to Journal of Mechanical Design.*
- J106 E. S. McGee , E. R. Brubaker, J. Cagan, and C. McComb. Automating Interaction Dynamics Notation for Real-Time Team Analysis, 2026. *Accepted to Journal of Mechanical Design.*
- J105 Z. Xu , N. Martelaro, and C. McComb. Ceci N'est Pas un Drone: Investigating the Impact of Design Representation on Design Decision Making When Using GenAI, 2026. *Accepted to Journal of Mechanical Design.*
- J104 J. Menold, C. McComb, C. Tucker, and P. Y. Papalambros. Greater than the Sum of Our Parts: The New Division of Labor in Design with AI, 2026. PNAS Nexus, vol. 5, issue 6, pp. 1-13, DOI: [10.1093/pnasnexus/pgag208](https://doi.org/10.1093/pnasnexus/pgag208).

- J103 J. Ezemba , M. Mehta , C. Tucker, and C. McComb. VizArQA: A Foundation for Visual Question Answering in Architectural Simulation, 2026. *Journal of Engineering for Sustainable Buildings and Cities*, vol. 7, issue 2, pp. 021002-1 – 021002-17, DOI: [10.1115/1.4071865](https://doi.org/10.1115/1.4071865).
- J102 W. Xu , A. Archer, M. McCarrell, S. Hesser, N. Grande Gutierrez, and C. McComb. Scalable super-resolution of flow conveyance systems through adaptive domain decomposition, 2026. *Journal of Computing and Information Science in Engineering*, vol. 26, issue 12, pp. 121001-1 – 121001-14, DOI: [10.1115/1.4071858](https://doi.org/10.1115/1.4071858).
- J101 M. Mudzurandende , K. Flanigan, and C. McComb. Characterizing Sequential Patterns of Human Behavior in Advanced Manufacturing, 2026. *Journal of Computing and Information Science in Engineering*, vol. 26, issue 7, pp. 071001-1 – 071001-13, DOI: [10.1115/1.4070583](https://doi.org/10.1115/1.4070583).
- J100 P. K. Pischulti, M.Y. Hwang , C. McComb, and K. Arquilla. ‘Interaction Twin in the middle’: a distributed digital twin architecture to model team interactions and dynamics for deep space missions, 2026. *Frontiers in Aerospace Engineering*, vol. 5, DOI: [10.3389/fpace.2026.1736392](https://doi.org/10.3389/fpace.2026.1736392).
- J99 M. Doctorarastoo, K. Flanigan, M. Bergés, and C. McComb. Forging EMPIRE: A data-driven agent-based model for scenario-based generalizability in spatio-temporal human behavior modeling, 2026. *Journal of Computers, Environment and Urban Systems*, vol. 126, pp. 1–20, DOI: [10.1016/j.compenvurbsys.2026.102418](https://doi.org/10.1016/j.compenvurbsys.2026.102418).
- J98 W. Xu , Madhav Karthikeyakannan, C. McComb, and N. Grande Gutierrez. Energy-based feature extraction with adaptive local domain decomposition for prediction of transient and turbulence flow with operator regression models, 2026. *Computers and Fluids*, vol. 307, pp. 1–16, DOI: [10.1016/j.compfluid.2025.106958](https://doi.org/10.1016/j.compfluid.2025.106958).
- J97 A. Agrawal , and C. McComb. Adaptive Learning of Design Strategies over Non-Hierarchical Multi-Fidelity Models via Policy Alignment, 2026. *Journal of Mechanical Design*, vol. 148, issue 1, pp. 011703-1 – 011703-15, DOI: [10.1115/1.4069277](https://doi.org/10.1115/1.4069277).
- J96 J. Ezemba , C. McComb, and C. Tucker. Neural Network Surrogate Modeling for Stochastic FEM using 3D Graph Representations: A Comparative Study, 2026. *Journal of Mechanical Design*, vol. 148, issue 1, pp. 011704-1 – 011704-14, DOI: [10.1115/1.4069278](https://doi.org/10.1115/1.4069278).
- J95 S. McGee , J. Cagan, and C. McComb. Guiding Generalized Team Problem Solving through a Collective Intelligence-Based Artificial Intelligence Facilitator, 2026. *Journal of Mechanical Design*, vol. 148, issue 1, pp. 011402-1 – 011402-13, DOI: [10.1115/1.4068909](https://doi.org/10.1115/1.4068909).
- J94 M. Ying , D. Grandi, A. Groom, and C. McComb. Aligning Agents with Experts in Material Selection: Prompting, Size, and Reasoning, 2025. *Journal of Computing and Information Science in Engineering*, vol. 26, issue 7, pp. 071006-1 – 071006-13, DOI: [10.1115/1.4071467](https://doi.org/10.1115/1.4071467).
- J93 K. Shea, T. Stankovic, A. Agrawal , J. Cagan, and C. McComb. Expanding the Generative Power of LLMs for Engineering Design through Formal Engineering Design Grammars, 2025. *Journal of Computing and Information Science in Engineering*, vol. 25, 120802-1 – 120802-14, DOI: [10.1115/1.4070095](https://doi.org/10.1115/1.4070095).
- J92 J. Chen , W. Xu , Z. Xu , N. Grande Gutierrez, S. Narra, and C. McComb. Enforcing the Principle of Locality for Physical Simulations with Neural Operators, 2025. *Journal of Computational Physics*, vol. 538, DOI: [10.1016/j.jcp.2025.114131](https://doi.org/10.1016/j.jcp.2025.114131).
- J91 Z. Xu , N. Martelaro, and C. McComb. Mind Over Modality? The Impact of Design Representation on Shared Understanding in Collaborative Student Engineering Design, 2025. *Design Science*, vol. 11, DOI: [10.1017/dsj.2025.10008](https://doi.org/10.1017/dsj.2025.10008).
- J90 A. Noorghasemi , and C. McComb. KeepDelta: A Python Library for Human-Readable Data Differencing, 2025. *Journal of Open-Source Software*, DOI: [10.21105/joss.08075](https://doi.org/10.21105/joss.08075).
- J89 J. Chen , M. Baldwin , S. Narra, and C. McComb. Multi-lattice Topology Optimization via Generative Lattice Modeling, 2025. *Journal of Mechanical Design*, vol. 147, issue 5, 051707-1 – 051707-14, DOI: [10.1115/1.4067528](https://doi.org/10.1115/1.4067528).
- J88 A. Karri, G. Stump, C. McComb, and B. Song. HUVER: The HyForm Uncrewed Vehicle Engineering Repository, 2025. *Journal of Mechanical Design*, vol. 147, issue 4, pp. 044505-1 – 044505-6, DOI: [10.1115/1.4067711](https://doi.org/10.1115/1.4067711).
- J87 J. Martins, C. Lin, K. Flanigan, and C. McComb. HM-SYNC: A Multimodal Dataset of Human Interactions with Advanced Manufacturing Machinery, 2025. *Journal of Mechanical Design*, vol. 147, issue 4, pp. 044504-1 – 044504-10, DOI: [10.1115/1.4067744](https://doi.org/10.1115/1.4067744).
- J86 Y. Patawari Jain , D. Grande, A. Groom, B. Cramer, and C. McComb. MSEval: A Dataset for Material Selection in Conceptual Design to Evaluate Algorithmic Models, 2025. *Journal of Mechanical Design*, vol. 147, issue 4, pp. 044502-1 – 044502-9, DOI: [10.1115/1.4067453](https://doi.org/10.1115/1.4067453).
- J85 W. Xu , C. McComb, and N. Grande Gutierrez. Taylor series error correction network for super-resolution of discretized partial differential equation solutions, 2025. *Journal of Computational Physics*, vol. 521, DOI: [10.1016/j.jcp.2024.113569](https://doi.org/10.1016/j.jcp.2024.113569).
- J84 K. Ma, D. Grande, C. McComb, and K. Goucher-Lambert. Do Large Language Models Produce Diverse Design Concepts? A Comparative Study with Human Crowdsourced Solutions, 2025. *Journal of Computing and Information Science in Engineering*, vol. 25, issue 2, pp. 024501-1 – 024501-9, DOI: [10.1115/1.4067332](https://doi.org/10.1115/1.4067332).

- J83 J. Chen [†], M. Khrenov, J. Jin, S. Narra, and C. McComb. Data-Driven Inpainting for Full-Part Temperature Monitoring in Additive Manufacturing. *Journal of Manufacturing Systems*, vol. 77, pp. 558–575, DOI: [10.1016/j.jmsy.2024.09.022](https://doi.org/10.1016/j.jmsy.2024.09.022).
- J82 D. Grande, Y. Patawari Jain , A. Groom, B. Cramer, and C. McComb. Evaluating Large Language Models for Material Selection. *Journal of Computing and Information Science in Engineering*, vol. 25, issue 2, pp. 021004-1 – 021004-12, DOI: [10.1115/1.4066730](https://doi.org/10.1115/1.4066730).
- J81 V. Agarwal , K. Jablokow, and C. McComb. Putting The Ghost In The Machine: Emulating Cognitive Style in Large Language Models. *Journal of Computing and Information Science in Engineering*, vol. 25, issue 2, pp. 021002-1 – 021002-8, DOI: [10.1115/1.4066857](https://doi.org/10.1115/1.4066857).
- J80 M. Baldwin , N. Meisel, and C. McComb. Smooth Like Butter: Evaluating Multi-Lattice Transitions in Stiffness-Tensor Augmented Latent Spaces. *3D Printing and Additive Manufacturing*, vol. 12, no. 1, DOI: [10.1089/3dp.2023.0316](https://doi.org/10.1089/3dp.2023.0316).
- J79 J. Chen [†], W. Xu , M. Baldwin , B. Nijhuis, T. van den Boogard, N. Grande Gutierrez, S. Narra, and C. McComb. Capturing Local Temperature Evolution during Additive Manufacturing with Fourier Neural Operator, 2024. *Journal of Manufacturing Science and Engineering*, vol. 146, issue 9, pp. 091001-1 – 091001-10, DOI: [10.1115/1.4065316](https://doi.org/10.1115/1.4065316).
- J78 S. Rismiller , J. Cagan, and C. McComb. Understanding Collaboration in Sub-Structured Teams Through a Computational Model of Set-Based Concurrent Engineering. *Journal of Engineering Design*, vol. 35, issue 5, pp. 543-569, DOI: [10.1080/09544828.2024.2324402](https://doi.org/10.1080/09544828.2024.2324402).
- J77 Z. Xu , C. Hong , N. F. Soria Zurita , J. Gyory, G. Stump, H. Nolte , J. Cagan, and C. McComb. Adaptation Through Communication: Assessing Human–Artificial Intelligence Partnership for the Design of Complex Engineering Systems, 2024. *ASME Journal of Mechanical Design*, vol. 146, issue 8, pp. 081401-1 – 081401-16, DOI: [10.1115/1.4064490](https://doi.org/10.1115/1.4064490).
- J76 J. Chen [†], J. Pierce , G. Williams , T.W. Simpson, N. A. Meisel, S. Narra, and C. McComb. Accelerating Thermal Simulations in Additive Manufacturing by Training Physics-Informed Neural Networks With Randomly Synthesized Data, 2024. *ASME Journal of Computing and Information Science in Engineering*, vol. 24, issue 1, pp. 011004-1 – 011004-10, DOI: [10.1115/1.4062852](https://doi.org/10.1115/1.4062852).
- J75 Z. Wang, M. Xiao, D. Nicolsky, V. Romanovsky, C. McComb, and L. Farquharson. Arctic Coastal Hazard Assessment Considering Permafrost Thaw Subsidence, Coastal Erosion, and Flooding, 2023. *Environmental Research Letters*, vol. 18, DOI: [10.1088/1748-9326/acf4ac](https://doi.org/10.1088/1748-9326/acf4ac).
- J74 S. Rismiller , J. Cagan, and C. McComb. Delimiting Design: Expanding the Limits of Concurrency through Set-Based Concurrent Engineering, 2023. *Journal of Engineering Design*, vol. 34, issue 10, pp. 786-813, DOI: [10.1080/09544828.2023.2260665](https://doi.org/10.1080/09544828.2023.2260665).
- J73 L. Alessa, J. Valentine, S. Moon, C. McComb, S. Hicks , V. Romanovsky, M. Xiao, and A. Kliskey. Treading on thawing ground: spatial integration of composite and temporal indices for critical infrastructure, community resilience, and national security with the permafrost vulnerability index, 2023. *Geographics*, vol. 3, issue 3, pp. 522-542, DOI: [10.3390/geographies3030027](https://doi.org/10.3390/geographies3030027).
- J72 M. Baldwin , N. Meisel, and C. McComb. AddLat2D: The 2D Lattice Generator. *Software Impacts*, vol. 17, pp. 1–7, DOI: [10.1016/j.simpa.2023.100567](https://doi.org/10.1016/j.simpa.2023.100567).
- J71 Z. Wang, M. Lieu, A. Jensen, L. Farquharson, V. Romanovsky, D. Nicolsky, C. McComb, B. Jones, X. Zhang, and L. Alessa. Arctic Geohazard Risk Assessment Tools for Civil Infrastructure Planning: A Systematic Review. *Cold Regions Science and Technology*, vol. 214, pp. 1-13, DOI: [10.1016/j.coldregions.2023.103969](https://doi.org/10.1016/j.coldregions.2023.103969).
- J70 M. Agyemang [†], A. Andreae, and C. McComb. Uncovering Potential Bias in Engineering Design: A Comparative Review of Bias Research in Medicine. *Design Science*, vol. 9, DOI: [10.1017/dsj.2023.17](https://doi.org/10.1017/dsj.2023.17).
- J69 H. Nolte  and C. McComb. Investigating the Relationship between Mindfulness, Stress, and Creativity in Introductory Engineering Design. *Design Science*, vol. 9, DOI: [10.1017/dsj.2023.20](https://doi.org/10.1017/dsj.2023.20).
- J68 M. AlZayed , S. Miller, J. Menold, J. Huff, and C. McComb. Does empathy lead to creativity? A simulation-based investigation on the role of team trait empathy on nominal concept generation and early concept screening. *Artificial Intelligence for Engineering Design, Analysis, and Manufacturing*, DOI: [10.1017/S089006042300001X](https://doi.org/10.1017/S089006042300001X).
- J67 M. Baldwin , N. Meisel, and C. McComb. Smoothing the Rough Edges: Evaluating Automatically Generated Multi-Lattice Transitions. *3D Printing and Additive Manufacturing*, DOI: [10.1089/3dp.2023.0008](https://doi.org/10.1089/3dp.2023.0008).
- J66 S. Rismiller , J. Cagan, and C. McComb. Exploring the Impact of Set-Based Concurrent Engineering Through Multi Agent System Simulation. *Artificial Intelligence for Engineering Design, Analysis, and Manufacturing*, vol. 37, issue 8, DOI: [10.1017/S0890060423000112](https://doi.org/10.1017/S0890060423000112).
- J65 M. Hu, C. McComb, and K. Goucher-Lambert. Uncovering Hidden Patterns of Design Ideation Using Hidden Markov Modeling and Neuroimaging, 2023. *Artificial Intelligence for Engineering Design, Analysis, and Manufacturing*, vol. 37, issue 8, DOI: [10.1017/S0890060423000021](https://doi.org/10.1017/S0890060423000021).
- J64 J. T. Gyory, N. F. Soria Zurita [†], J. Cagan, and C. McComb. Independence or Interaction? Understanding the Benefits and Limitations of Nominally-Inspired and Interacting Sub-Structured Teams in a Virtual and Interdisciplinary Engineering Design Task, 2023. *ASME Journal of Mechanical Design*, vol. 145, issue 5, pp. 051405 -1 – 051405-12, DOI:

10.1115/1.4056597.

- J63 A. Agrawal  and C. McComb. Reinforcement Learning for Efficient Design Space Exploration with Variable Fidelity Analysis Models, 2023. *ASME Journal of Computing and Information Science in Engineering*, vol. 23, issue 4, pp. 041004-1 – 041004-11, DOI: [10.1115/1.4056297](https://doi.org/10.1115/1.4056297).
- J62 J. Bracken Brennan, W. B. Miney, T. W. Simpson, K. W. Jabllokow, and C. McComb. Manufacturing Fixation in Design: Exploring the Effects of Fixation on Manufacturing Types When Generating Design Ideas, 2023. *ASME Journal of Mechanical Design*, vol. 145, issue 1, pp. 012005-1 – 012005-8, DOI: [10.1115/1.4056222](https://doi.org/10.1115/1.4056222).
- J61 A. Raina , J. Cagan, and C. McComb. Learning to design without prior data: Discovering generalizable design strategies using deep learning and tree search, 2023. *ASME Journal of Mechanical Design*, vol. 145, issue 3, pp. 031402-1 – 031402-13, DOI: [10.1115/1.4056221](https://doi.org/10.1115/1.4056221).
- J60 G. Williams , N. A. Meisel, T. W. Simpson, and C. McComb. Design for Artificial Intelligence: Proposing a Conceptual Framework Grounded in Data Wrangling, 2022. *ASME Journal of Computing and Information Science in Engineering*, vol. 22, issue 6, pp. 060903-1 – 060903-10, DOI: [10.1115/1.4055854](https://doi.org/10.1115/1.4055854).
- J59 S. Krishnakumar, C. Berdanier, C. Lauff, C. McComb, and J. Menold. The stories novice designers tell: How rhetorical structures and prototyping shape communication with external audiences, 2022. *Design Studies*, vol. 82, pp. 1 – 38, DOI: [10.1016/j.destud.2022.101133](https://doi.org/10.1016/j.destud.2022.101133).
- J58 H. Singh , G. Cascini, and C. McComb. Idea selection in design teams: a computational framework and insights in the presence of influencers, 2022. *Design Science*, vol. 8, pp. 1 – 43, DOI: [10.1017/dsj.2022.17](https://doi.org/10.1017/dsj.2022.17).
- J57 E. Evans , and C. McComb. The Problem with Printing Pitch: challenges in designing 3D printed claves, 2022. *Rapid Prototyping Journal*, vol. 29, issue 1, pp. 145 – 156, DOI: [10.1108/RPJ-01-2022-0028](https://doi.org/10.1108/RPJ-01-2022-0028).
- J56 T. Maier , J. Menold, and C. McComb. The Relationship Between Performance and Trust in AI in E-Finance, 2022. *Frontiers in Artificial Intelligence*, vol. 5, pp. 1 – 17, DOI: [10.3389/frai.2022.891529](https://doi.org/10.3389/frai.2022.891529).
- J55 J. T. Gyory, K. Kotovsky, J. Cagan, and C. McComb. Comparing the Impacts on Team Behaviors Between AI and Human Process Management in Interdisciplinary Design Teams, 2022. *ASME Journal of Mechanical Design*, vol. 144, issue 10, pp. 104501-1 – 104502-6, DOI: [10.1115/1.4054723](https://doi.org/10.1115/1.4054723).
- J54 N. Radwan , and C. McComb. A Computational Study of Design Team Robustness Through the Lens of Cognitive Style, 2022. *ASME Journal of Mechanical Design*, vol. 144, issue 10, pp. 104502-1 – 104502-7, DOI: [10.1115/1.4054722](https://doi.org/10.1115/1.4054722).
- J53 M. Liew, X. Ji, M. Xiao, L. Farquharson, D. Nicolsky, V. Romanovsky, M. Bray, X. Zhang, and C. McComb. Synthesis of physical processes of permafrost degradation and geophysical and geomechanical properties of permafrost., 2022. *Cold Regions Science and Technology*, vol. 198, pp. 1 – 20, DOI: [10.1016/j.coldregions.2022.103522](https://doi.org/10.1016/j.coldregions.2022.103522).
- J52 M. Liew, M. Xiao, L. Farquharson, D. Nicolsky, A. Jensen, V. Romanovsky, J. Peirce, L. Alessa, C. McComb, X. Zhang, and B. Jones. Understanding Effects of Permafrost Degradation and Coastal Erosion on Civil Infrastructure in Arctic Coastal Villages: A Community Survey and Knowledge Co-Production., 2022. *Journal of Marine Science and Engineering*, vol. 10, issue 3, pp. 1 – 25, DOI: [10.3390/jmse10030422](https://doi.org/10.3390/jmse10030422).
- J51 H. Singh , G. Cascini, and C. McComb. Virtual and face-to-face team collaboration comparison through an agent-based simulation., 2022. *ASME Journal of Mechanical Design*, vol. 144, issue 7, pp. 071706-1 – 071706-15, DOI: [10.1115/1.4054242](https://doi.org/10.1115/1.4054242).
- J50 H. Nolte , J. Huff, and C. McComb. No Time for That?: An Investigation of Mindfulness and Stress in First-Year Engineering Design., 2022. *Design Science*, vol. 8, pp. 1 – 33, DOI: [10.1017/dsj.2022.5](https://doi.org/10.1017/dsj.2022.5).
- J49 N. F. Soria Zurita [†], J. T. Gyory, C. Balon, J. Martin, K. Kotovsky, J. Cagan, and C. McComb. Data on the Human versus Artificial Intelligence Process Management Experiment., 2022. *Data in Brief*, vol. 41, pp. 1 – 10, DOI: [10.1016/j.dib.2022.107917](https://doi.org/10.1016/j.dib.2022.107917).
- J48 B. Song [†], J. T. Gyory, G. Zhang, N. F. Soria Zurita [†], G. Stump, J. Martin, S. Miller, C. Balon, M. Yukish, C. McComb, and J. Cagan. Decoding the Agility of Artificial Intelligence-Assisted Human Design Teams., 2022. *Design Studies*, vol. 79, pp. 1 – 33, DOI: [10.1016/j.destud.2022.101094](https://doi.org/10.1016/j.destud.2022.101094).
- J47 M. Li , and C. McComb. Using Physics-Informed Generative Adversarial Networks to Perform Super-Resolution for Multiphase Fluid Simulations., 2022. *ASME Journal of Computing and Information Science in Engineering*, vol. 22, issue 4, pp. 044501-1 – 044501-7, DOI: [10.1115/1.4053671](https://doi.org/10.1115/1.4053671).
- J46 M. Alzayed , S. R. Miller, and C. McComb. Empathic creativity: can trait empathy predict creative concept generation and selection?, 2022. *Artificial Intelligence for Engineering Design, Analysis and Manufacturing*, vol. 35, issue 4, pp. 369 – 383, DOI: [10.1017/S0890060421000196](https://doi.org/10.1017/S0890060421000196).
- J45 S. Krishnakumar, T. Maier , C. Berdanier, S. Ritter, C. McComb, and J. Menold. Using Workplace Thriving Theory to Investigate First-Year Engineering Students' Abilities to Thrive during the Transition to Online Learning due to COVID-19., 2022. *Journal of Engineering Education*, vol. 111, issue 2, pp. 474 – 493, DOI: [10.1002/jee.20447](https://doi.org/10.1002/jee.20447).
- J44 T. Maier , N. F. Soria Zurita [†], E. Starkey, D. Spillane, J. Menold, and C. McComb. Comparing Human and Cognitive Assistant Facilitated Brainstorming Sessions, 2022. *Journal of Engineering Design*, vol. 33, issue 4, pp. 259 – 283, DOI:

[10.1080/09544828.2022.2032623](https://doi.org/10.1080/09544828.2022.2032623).

- J43 C. McComb and K. W. Jablowski. A Conceptual Framework for Deeply Multidisciplinary Design Research with Example Application to Agent-Based Modeling., 2022. *Design Studies*, vol. 8, pp. 1 – 13, DOI: [10.1016/j.destud.2021.101074](https://doi.org/10.1016/j.destud.2021.101074).
- J42 A. Raina , J. Cagan, and C. McComb. Design Strategy Networks: A deep hierarchical approach to represent state-action relationships using spatial intuition in generative design processes., 2022. *ASME Journal of Mechanical Design*, vol. 144, issue 2, pp. 021404-1 – 021404-12, DOI: [10.1115/1.4052566](https://doi.org/10.1115/1.4052566).
- J41 J. T. Gyory, N. F. Soria Zurita [†], J. Martin, C. Balon, C. McComb, K. Kotovsky, and C. Cagan. Human versus Artificial Intelligence: A Data-Driven Approach to Real-Time Process Management During Complex Engineering Design., 2022. *ASME Journal of Mechanical Design*, vol. 144, pp. 021405-1 – 021405-13, DOI: [10.1115/1.4052488](https://doi.org/10.1115/1.4052488).
- J40 B. Song [†], N. F. Soria Zurita [†], H. Nolte , H. Singh , J. Cagan, and C. McComb. When faced with increasing complexity: The effectiveness of AI assistance for drone design., 2022. *ASME Journal of Mechanical Design*, vol. 144, issue 2, pp. 021701-1 – 021701-12, DOI: [10.1115/1.4051871](https://doi.org/10.1115/1.4051871).
- J39 J. Bracken, T. W. Simpson, C. McComb, K. W. Jablowski, and J. Hamann. Part Filtering Methods for Additive Manufacturing: A Detailed Review and a Novel Process-Agnostic Method., 2021. *Additive Manufacturing*, vol. 47, pp. 1 – 13, DOI: [10.1016/j.addma.2021.102115](https://doi.org/10.1016/j.addma.2021.102115).
- J38 H. Singh , G. Cascini, and C. McComb. Influencers in Design Teams: A Computational Framework to Study Their Impact on Idea Generation., 2021. *Artificial Intelligence for Engineering Design, Analysis, and Manufacturing*, vol. 35, pp. 332 – 352, DOI: [10.1017/S0890060421000305](https://doi.org/10.1017/S0890060421000305).
- J37 G. Zhang, N. F. Soria Zurita [†], G. Stump, B. Song [†], J. Cagan, and C. McComb. Data on the Design and Operation of Drones by Both Individuals and Teams., 2021. *Data in Brief*, vol. 36, pp. 1 – 11, DOI: [10.1016/j.dib.2021.107008](https://doi.org/10.1016/j.dib.2021.107008).
- J36 T. Maier , S. Abdullah, J. Menold, and C. McComb. A Query Conundrum: The Mental Challenges of Using a Cognitive Assistant., 2021. *SN Computer Science*, vol. 2, pp. 1 – 15, DOI: [10.1007/s42979-021-00621-9](https://doi.org/10.1007/s42979-021-00621-9).
- J35 A. Raina , L. Puentes , J. Cagan, and C. McComb. Goal-Directed Design Agents: Integrating Visual Imitation with One-Step Lookahead Optimization for Generative Design., 2021. *ASME Journal of Mechanical Design*, vol. 143, pp. 124501-1 – 124501-6, DOI: [10.1115/1.4051013](https://doi.org/10.1115/1.4051013).
- J34 S. Rismiller , J. Cagan, and C. McComb. An Adversarial Agent-Based Design Method Using Stochastic Stackelberg Game Conditions., 2021. *ASME Journal of Mechanical Design*, vol. 143, pp. 031714-1 – 031714-5, DOI: [10.1115/1.4049862](https://doi.org/10.1115/1.4049862).
- J33 H. Nolte  and C. McComb. The Cognitive Experience of Engineering Design: An Examination of First-Year Student Stress Across Principal Activities of the Engineering Design Process., 2021. *Design Science*, vol. 7, pp. 1 – 31, DOI: [10.1017/dsj.2020.32](https://doi.org/10.1017/dsj.2020.32).
- J32 F.M. Tehrani, C. McComb, and S. Scott. A Quantitative Approach to Evaluate the Application of the Extended Situational Teaching Model in Engineering Education., 2021. *Stats*, vol. 4, pp. 46 – 61, DOI: [10.3390/stats4010004](https://doi.org/10.3390/stats4010004).
- J31 G. Zhang, A. Raina , J. Cagan, and C. McComb. A Cautionary Tale of Human-AI Collaboration in Design Teams., 2021. *Design Studies*, vol. 72, pp. 1 – 23, DOI: [10.1016/j.destud.2021.100990](https://doi.org/10.1016/j.destud.2021.100990).
- J30 S. Krishnakumar, C. Berdanier, C. McComb, and J. Menold. Lost in Translation: Examining the Complex Relationship between Prototyping and Communication., 2021. *ASME Journal of Mechanical Design*, vol. 143, pp. 091402-1 – 091402-11, DOI: [10.1115/1.4049885](https://doi.org/10.1115/1.4049885).
- J29 E. Bayrak, C. McComb, K. Kotovsky, and J. Cagan. A Strategic Decision-making Architecture Toward Hybrid Teams for Dynamic Competitive Problems., 2021. *Decision Support Systems*, vol. 144, pp. 1 – 12, DOI: [10.1016/j.dss.2020.113490](https://doi.org/10.1016/j.dss.2020.113490).
- J28 P. Khanolkar , S. Basu, and C. McComb. Image-based Data on Strain Fields of Microstructures with Porosity Defects., 2021. *Data in Brief*, vol. 34, pp. 1 – 5, DOI: [10.1016/j.dib.2020.106627](https://doi.org/10.1016/j.dib.2020.106627).
- J27 M. Alzayed , C. McComb, J. Menold, J. Huff, and S. R. Miller. Are you feeling me? An exploration of empathy development in engineering design education., 2021. *ASME Journal of Mechanical Design*, vol. 143, pp. 112301-1 – 112301-14, DOI: [10.1115/1.4048624](https://doi.org/10.1115/1.4048624).
- J26 H. Nolte , C. Berdanier, J. Menold, and C. McComb. Assessing Engineering Design: A Comparison of the Effect of Exams and Design Practice on First-Year Students Design Self-Efficacy., 2021. *ASME Journal of Mechanical Design*, vol. 143, issue 5, pp. 052301-1 – 052301-9, DOI: [10.1115/1.4048747](https://doi.org/10.1115/1.4048747).
- J25 P. Khanolkar , C. McComb, and S. Basu. Predicting elastic strain fields in defective microstructures using image colorization algorithms, 2021. *Computational Material Science*, vol. 186, pp. 1 – 11, DOI: [10.1016/j.commatsci.2020.110068](https://doi.org/10.1016/j.commatsci.2020.110068).
- J24 L. Puentes , J. Cagan, and C. McComb. Data-Driven Heuristic Induction from Human Design Behavior., 2021. *ASME Journal of Computing and Information Science in Engineering*, vol. 21, issue 2, pp. 024501-1 – 024501-5, DOI: [10.1115/1.4048425](https://doi.org/10.1115/1.4048425).
- J23 P. Mehta, M. Malviya, C. McComb, G. Manogharan, and C. Berdanier. Mining Design Heuristics for Additive Manufacturing Via Eye-Tracking Methods and Hidden Markov Modeling., 2020. *ASME Journal of Mechanical Design*, vol. 142, pp. 124502-1 – 124502-6, DOI: [10.1115/1.4048410](https://doi.org/10.1115/1.4048410).
- J22 S. Prakash, T. Mahan, G. Williams , C. McComb, J. Menold, and C. Tucker. Detection Of System Compromise In Addi-

- tive Manufacturing Using Video Motion Magnification., 2020. *ASME Journal of Mechanical Design*, vol. 142, pp. 031109-1 – 031109-11, DOI: [10.1115/1.4045547](https://doi.org/10.1115/1.4045547).
- J21 L. Puentes , J. Cagan, and C. McComb. Heuristic-Guided Solution Search through a Two-Tiered Design Grammar., 2020. *ASME Journal of Computing and Information Science in Engineering*, vol. 20, pp. 011008-1 – 011008-10, DOI: [10.1115/1.4044694](https://doi.org/10.1115/1.4044694).
- J20 J. Nelson, T. Mahan, C. McComb, and J. Menold. The Prototyping Behaviors of Startups: Exploring the Relationship Between Prototyping Behaviors and Startup Strategies., 2020. *ASME Journal of Mechanical Design*, vol. 142, pp. 031107-1 – 031107-10, DOI: [10.1115/1.4045526](https://doi.org/10.1115/1.4045526).
- J19 A. Raina , J. Cagan, and C. McComb. Transferring Design Strategies from Human to Computer and Across Design Problems., 2019. *ASME Journal of Mechanical Design*, vol. 141, pp. 114501-1 – 114501-7, DOI: [10.1115/1.4044258](https://doi.org/10.1115/1.4044258).
- J18 A. Raina , C. McComb, and J. Cagan. Learning To Design From Humans: Imitating Human Designers Through Deep Learning., 2019. *ASME Journal of Mechanical Design*, vol. 141, pp. 111102-1 – 111102-11, DOI: [10.1115/1.4044256](https://doi.org/10.1115/1.4044256).
- J17 S. Lapp , K. W. Jablowski, and C. McComb. KABOOM: An Agent-Based Model for Simulating Cognitive Style in Team Problem Solving., 2019. *Design Science*, vol. 5, pp. 1 – 23, DOI: [10.1017/dsj.2019.12](https://doi.org/10.1017/dsj.2019.12).
- J16 M. Alzayed , C. McComb, S. Hunter, and S. Miller. Expanding the Solution Space in Engineering Design Education: A Simulation-Based Investigation of Product Dissection., 2019. *ASME Journal of Mechanical Design*, vol. 141, pp. 032001-1 – 032001-11, DOI: [10.1115/1.4042426](https://doi.org/10.1115/1.4042426).
- J15 M. Li , N. Mahajan, J. Menold, and C. McComb. Image collection of 3D-printed prototypes and non-3D-printed prototypes., 2019. *Data in Brief*, vol. 27, pp. 1 – 4, DOI: [10.1016/j.dib.2019.104691](https://doi.org/10.1016/j.dib.2019.104691).
- J14 G. Williams , N. A. Meisel, T. W. Simpson, and C. McComb. Design Repository Effectiveness for 3D Convolutional Neural Networks: Application to Additive Manufacturing., 2019. *ASME Journal of Mechanical Design*, vol. 141, pp. 111701-1 – 111701-12, DOI: [10.1115/1.4044199](https://doi.org/10.1115/1.4044199).
- J13 T. Maier , J. DeFranco, and C. McComb. An Analysis of Design Process and Performance in Distributed Data Science Teams., 2019. *Team Performance Management*, vol. 25, pp. 419 – 439, DOI: [10.1108/TPM-03-2019-0024](https://doi.org/10.1108/TPM-03-2019-0024).
- J12 T. Mahan, N.A. Meisel, C. McComb, and J. Menold. Pulling at the Digital Thread: Exploring Tolerance Stack Up Between Automatic Procedures and Expert Strategies in Scan To Print Processes., 2019. *ASME Journal of Mechanical Design*, vol. 141, pp. 021701-1 – 021701-12, DOI: [10.1115/1.4041927](https://doi.org/10.1115/1.4041927).
- J11 C. McComb, N.G. Johnson, P.S. Santaeufemia , B.T. Gorman, and K. Shimada. Multi-Objective Optimization and Scenario-based Robustness Analysis of the MoneyMaker Hip Pump., 2018. *Journal of Development Engineering*, vol. 3, pp. 23 – 33, DOI: [10.1016/j.deveng.2018.01.001](https://doi.org/10.1016/j.deveng.2018.01.001).
- J10 C. McComb, J. Cagan, and K. Kotovsky. Data on the Design of Truss Structures by Teams of Engineering Students., 2017. *Data in Brief*, vol. 18, pp. 160 – 163, DOI: [10.1016/j.dib.2017.02.078](https://doi.org/10.1016/j.dib.2017.02.078).
- J9 C. McComb, J. Cagan, and K. Kotovsky. Data on the Configuration Design of Internet-Connected Home Cooling Systems by Engineering Students., 2017. *Data in Brief*, vol. 14, pp. 773 – 776, DOI: [10.1016/j.dib.2017.08.050](https://doi.org/10.1016/j.dib.2017.08.050).
- J8 C. McComb, J. Cagan, and K. Kotovsky. Mining Process Heuristics from Design Action Data via Hidden Markov Models, 2017. *ASME Journal of Mechanical Design*, vol. 139, pp. 111412-1 – 111412-12, DOI: [10.1115/1.4037308](https://doi.org/10.1115/1.4037308).
- J7 C. McComb, J. Cagan, and K. Kotovsky. Capturing Human Sequence-Learning Abilities in Configuration Design Tasks through Markov Chains., 2017. *ASME Journal of Mechanical Design*, vol. 139, pp. 091101-1 – 091101-12, DOI: [10.1115/1.4037185](https://doi.org/10.1115/1.4037185).
- J6 C. McComb, K. Goucher-Lambert, and J. Cagan. Impossible by Design? Fairness, Strategy, and Arrow's Impossibility Theorem., 2017. *Design Science*, vol. 3, pp. 1 – 26, DOI: [10.1017/dsj.2017.1](https://doi.org/10.1017/dsj.2017.1).
- J5 C. McComb, J. Cagan, and K. Kotovsky. Optimizing Design Teams Based on Problem Properties: Computational Team Simulations and an Applied Empirical Test., 2017. *ASME Journal of Mechanical Design*, vol. 139, pp. 041101-1 – 041101-12, DOI: [10.1115/1.4035793](https://doi.org/10.1115/1.4035793).
- J4 C. McComb, J. Cagan, and K. Kotovsky. Drawing Inspiration From Human Design Teams For Better Search And Optimization: The Heterogeneous Simulated Annealing Teams Algorithm., 2016. *ASME Journal of Mechanical Design*, vol. 138, pp. 044501-1 – 044501-6, DOI: [10.1115/1.4032810](https://doi.org/10.1115/1.4032810).
- J3 C. McComb, J. Cagan, and K. Kotovsky. Lifting the Veil: Drawing Insights about Design Teams from a Cognitively-Inspired Computational Model., 2015. *Design Studies*, vol. 40, pp. 119 – 142, DOI: [10.1016/j.destud.2015.06.005](https://doi.org/10.1016/j.destud.2015.06.005).
- J2 C. McComb and F.M. Tehrani. Enhancement of Shear Transfer in Composite Decks., 2015. *Engineering Structures*, vol. 88, pp. 251 – 261, DOI: [10.1016/j.engstruct.2015.01.046](https://doi.org/10.1016/j.engstruct.2015.01.046).
- J1 C. McComb, J. Cagan, and K. Kotovsky. Rolling with the Punches: An Examination of Team Performance in a Design Task Subject to Drastic Changes., 2015. *Design Studies*, vol. 36, pp. 99 – 121, DOI: [10.1016/j.destud.2014.10.001](https://doi.org/10.1016/j.destud.2014.10.001).

Conference Papers

- C134 S. Park, C. McComb, J. Xiao, and P. Tang. A Traceable AI-Agent Operation Framework Using Graph-Based Procedures

- in Nuclear Abnormal Scenario Simulation, 2026. *Submitted to Probabilistic Safety Assessment and Management (PSAM 18)*.
- C133 A. Noorghasemi  and C. McComb. Designing for AI Adoption: A Multi-Scale Modeling Framework for Engineering Organizations, 2026. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Theory and Methodology Conference*.
- C132 W. Xu , C.-E. Song , Z. Zdobinski , Z. Xu , M. Zhang , and C. McComb. DesignBench, 2026. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Automation Conference*.
- C131 C.-E. Song , J. J. Michalek, and C. McComb. Large Language Models as Complementary Agents for Dynamic Simulator-Driven Engineering Design Optimization, 2026. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Automation Conference*.
- C130 G. Natasha, A. Agarwal , L. Eckstein, M. Melville, H. E. Ellington, Z. Mineroff, and C. McComb. See One, Do One, Teach AI: Supporting Mastery and Self-Efficacy Through AI-as-a-Tutee, 2026. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Education Conference*.
- C129 J. Ezemba , C. Tucker, and C. McComb. Structure Shapes Coordination: An Empirical Evaluation of Organizational Design Principles in Multi-Agent Engineering Design, 2026. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Theory and Methodology Conference*.
- C128 Z. Xu , N. Martelaro, and C. McComb. Supervising Ralph Wiggum: Exploring a Metacognitive Co-Regulation Agentic AI Loop for Engineering Design, 2026. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Automation Conference*.
- C127 J. Ezemba , C. McComb, and C. Tucker. Organizationally-Intelligent Agents: Connecting Multi-Agent Engineering Systems to Organizational Design Theory, 2026. *Design Computing and Cognition '26*.
- C126 C. Xu , B. Akinci, and C. McComb. Toward a Time-Aware Assessment Framework for the Carbon Cost of AI-Enabled Decarbonization, 2026. *ASCE International Conference on Computing in Civil Engineering*.
- C125 M. Doctorarastoo, K. A. Flanigan, M. Bergés, and C. McComb. Evaluating Few-Shot Temporal Reasoning of LLMs for Human Activity Prediction in Smart Environments, 2026. *2026 IEEE Conference on Cognitive and Computational Aspects of Situation Management (CogSIMA)*.
- C124 M. Doctorarastoo, K. A. Flanigan, M. Bergés, and C. McComb. Comparative Evaluation of Neural Network Architectures for Generalizable Human Spatial Preference Prediction in Unseen Built Environments, 2025. *15th International Workshop on Structural Health Monitoring*.
- C123 P. Panta, S. Belbase, R. Rijal, B. Shreshtha, N. Panta, D. Parajuli, R. Acharya, S. Kafley, A. Regmi, K. Igeta, A. Tanaka, and C. McComb. PRESSNET: A Forming Dataset for Structural Simulation in Pressed Blanks with Deep Learning Benchmarks, 2025. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Automation Conference*, DOI: [10.1115/DETC2025-163821](https://doi.org/10.1115/DETC2025-163821).
- C122 M. Badwe , T. Mahan, J. Menold, and C. McComb. I Love ClaMP: A Tunable Optimization-Based Algorithm for Point Cloud Cleanup, 2025. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Automation Conference*, DOI: [10.1115/DETC2025-168924](https://doi.org/10.1115/DETC2025-168924).
- C121 N. Panta, S. Kafley, R. Acharya, S. Parajuli, D. Parajuli, P. Panta, S. Belbase, S. Pant, A. Regmi, A. Tanaka, and C. McComb. MEDA: A Multi-agentic System For Parametric CAD Model Creation, 2025. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Automation Conference*, DOI: [10.1115/DETC2025-163946](https://doi.org/10.1115/DETC2025-163946).
- C120 M. Ying , D. Grandi, A. Groom, and C. McComb. Evaluating the Role of Model Size in Agentic Ai for Expert-Like Material Selection, 2025. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Automation Conference*, DOI: <https://doi.org/10.1115/DETC2025-168873>.
- C119 W. Xu , A. Archer, M. McCarrell, S. Hesser, N. Grande Gutierrez, and C. McComb. Fast Super-resolution Analysis Of Low-pressure Duct Air Flow Through Adaptive Domain Decomposition, 2025. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Computers and Information in Engineering Conference*, DOI: [10.1115/DETC2025-169006](https://doi.org/10.1115/DETC2025-169006).
- C118 N. Giovanni , L. Zhang , J. Cagan, and C. McComb. CARA: The Corporate AI Readiness Assessment, 2025. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Theory and Methodology Conference*, DOI: [10.1115/DETC2025-168411](https://doi.org/10.1115/DETC2025-168411).
- C117 J. Ezemba , C. McComb, and C. Tucker. Neural Network Surrogate Modeling for Stochastic FEM using 3D Graph Representations: A Comparative Study, 2025. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Computers and Information in Engineering Conference*, DOI: [10.1115/DETC2025-167944](https://doi.org/10.1115/DETC2025-167944).
- C116 S. McGee , E. Brubaker, J. Cagan, and C. McComb. A Real-Time Automatic Interaction Dynamics Notation Approach, 2025. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*.

- ence – Design Theory and Methodology Conference, DOI: [10.1115/DETC2025-168665](https://doi.org/10.1115/DETC2025-168665).
- C115 R. Shockley , K. Herchenroether , Z. Xu , N. Martelaro, and C. McComb. The Impact of Design Representation on Equal Contribution in Engineering Design Teams, 2025. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Theory and Methodology Conference*, DOI: [10.1115/DETC2025-168883](https://doi.org/10.1115/DETC2025-168883).
- C114 M. Sulleiman , R. Ahmed, M. Kay, G. Manogharan, and C. McComb. I Cast The Drains Down In Africa: AM-Augmented Casting as An Enabler for the African Manufacturing Industry, 2025. *International Conference on Engineering Design*, DOI: [10.1017/pds.2025.10214](https://doi.org/10.1017/pds.2025.10214).
- C113 T. Zhou, M. Dong, P. Tang, A. Noorghasemi , C. McComb, and N. Martelaro. Human-Machine Collaboration with Reinforcement Learning for Explaining Manual Layout Strategies in Composite Materials Handling, 2025. *ASCE International Conference on Computing in Civil Engineering*, DOI: [10.1061/9780784486436.114](https://doi.org/10.1061/9780784486436.114).
- C112 J. Ezemba , C. McComb, and C. Tucker. Simulation vs. Hallucination: Assessing Vision-Language Model Question Answering Capabilities in Engineering Simulations, 2025. *2025 IEEE Workshop on Design Automation for CPS and IoT (DESTION)*, DOI: [10.1145/3722573.3727826](https://doi.org/10.1145/3722573.3727826).
- C111 Y. Kahlon, C. McComb, and F. Haruyuki. Developing An AI-assisted Survey of CAAD Research: An Overview of Three Decades of Research at CAADRIA, 2025. *2025 Computer-Aided Architectural Design Research in Asia*, URL: https://papers.cumincad.org/cgi-bin/works/paper/caadria2025_113.
- C110 M. Doctorarastoo, K. Flanigan, M. Bergés, and C. McComb. Integrating Preference-Aware Modeling of Human Spatial Behavior in Cyber-Physical-Human Systems, 2024. *NeurIPS 2024 Workshop on Behavioral ML*, URL: <https://openreview.net/forum?id=CLEmnpGj3K>.
- C109 Z. Xu , J. Liechty, S. Benthall, N. Skar-Gislinge, and C. McComb. GARCH-Informed Neural Networks for Volatility Prediction in Financial Markets, 2024. *ICAIF '24: 5th ACM International Conference on AI in Finance*, DOI: [10.1145/367705.23698600](https://doi.org/10.1145/367705.23698600).
- C108 C. Uhles, M.T. Mudzurandende , C. McComb, and H. Model. Understanding the Impacts of Jointly Optimizing Product and Supply Chain Decisions for Complex Products, 2024. *ASME International Mechanical Engineering Congress and Exposition*, DOI: [10.1115/IMECE2024-145529](https://doi.org/10.1115/IMECE2024-145529).
- C107 M. Baldwin , and C. McComb. Criteria-Based Evaluation of Multi-Lattice Structure Design Methods, 2024. *Solid Freeform Fabrication Symposium*, DOI: [10.26153/tsw/58272](https://doi.org/10.26153/tsw/58272).
- C106 M. Mermillod-Blondin , A. Olechowski, and C. McComb. Benchmarking the Current State of Lattice Design Software for Additive Manufacturing, 2024. *Solid Freeform Fabrication Symposium*, DOI: [10.26153/tsw/58081](https://doi.org/10.26153/tsw/58081).
- C105 J. Chen , M. Baldwin , S. Narra, and C. McComb. Multi-Lattice Topology Optimization With Lattice Representation Learned by Generative Models, 2024. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Theory and Methodology Conference*, DOI: [10.1115/DETC2024-145592](https://doi.org/10.1115/DETC2024-145592).
- C104 D. Valmyr , A. Valencia-Romero[†], and C. McComb. A Proposed Extension to the Functional Basis for AI/ML-Enabled Cyber-physical Systems, 2024. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Theory and Methodology Conference*, DOI: [10.1115/DETC2024-143666](https://doi.org/10.1115/DETC2024-143666).
- C103 Y. Jain , D. Grandi, A. Groom, B. Cramer, and C. McComb. Material Selection Using Large Language Models, 2024. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Theory and Methodology Conference*, DOI: [10.1115/DETC2024-143751](https://doi.org/10.1115/DETC2024-143751).
- C102 V. Agarwal , K. Jablokow, and C. McComb. Emulating Cognitive Style in Large Language Models, 2024. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Theory and Methodology Conference*, DOI: [10.1115/DETC2024-143677](https://doi.org/10.1115/DETC2024-143677).
- C101 A. Agrawal , and C. McComb. Symmetry Heuristics for Stable Reinforcement Learning Design Agents, 2024. *Design Computing and Cognition '24*, pp. 52–67, DOI: [10.1007/978-3-031-71922-6_4](https://doi.org/10.1007/978-3-031-71922-6_4).
- C100 M. Doctorarastoo, K. Flanigan, M. Bergés, and C. McComb. GNN-based Predictive Modeling of Human Preferences in the Built Environment, 2024. *ASCE International Conference on Computing in Civil Engineering*.
- C99 J. Martins, K. Flanigan, and C. McComb. Skeleton-based Human Action Recognition in a Thermal Comfort Context, 2023. *BuildSys 2023: The 10th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation*, DOI: [10.1145/3600100.3626339](https://doi.org/10.1145/3600100.3626339).
- C98 M. Doctorarastoo, K. Flanigan, M. Bergés, and C. McComb. Exploring the Potentials and Challenges of Cyber-Physical-Social Infrastructure Systems for Achieving Human-Centered Objectives, 2023. *BuildSys 2023: The 10th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation*, DOI: [10.1145/3600100.3626340](https://doi.org/10.1145/3600100.3626340).
- C97 M. Doctorarastoo, K. Flanigan, M. Bergés, and C. McComb. Modeling human behavior in cyber-physical-social infrastructure systems, 2023. *BuildSys 2023: The 10th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation*, DOI: [10.1145/3600100.3626338](https://doi.org/10.1145/3600100.3626338).
- C96 A. D. Cobb, A. Roy, D. Elenius, F. M. Heim, B. Swenson, S. Whittington, J. D. Walker, T. Bapty, J. Hite, K. Ramani, C. McComb, and S. Jha. AircraftVerse: A Large-Scale Multimodal Dataset of Aerial Vehicle Designs, 2023. *Advances in Neural*

Information Processing Systems (NeurIPS 2023) Datasets and Benchmarks Track. [arXiv:2306.05562](https://arxiv.org/abs/2306.05562).

- C95 G. Williams , M. Baldwin , T. Simpson, N. Meisel, and C. McComb. Dreaming of Data: Examining Data Augmentation for Machine Learning in Additive Manufacturing, 2023. *Solid Freeform Fabrication Symposium*, DOI: [10.26153/tsw/51070](https://doi.org/10.26153/tsw/51070).
- C94 M. Baldwin , N. Meisel, and C. McComb. Hybrid Geometric/Functional Autoencoders for Multi-Lattice Transitions, 2023. *Solid Freeform Fabrication Symposium*, DOI: [10.26153/tsw/51094](https://doi.org/10.26153/tsw/51094).
- C93 K. Ma, D. Grande, C. McComb, and K. Goucher-Lambert. Conceptual Design Generation Using Large Language Models, 2023. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Theory and Methodology Conference*, DOI: [10.1115/DETC2023-116838](https://doi.org/10.1115/DETC2023-116838).
- C92 J. Chen , W. Xu , M. Baldwin , B. Nijhuis, T. van den Boogard, N. Grande Gutierrez, S. Narra, and C. McComb. Capturing Local Temperature Evolution during Additive Manufacturing with Fourier Neural Operator, 2023. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – CIE Advanced Modeling and Simulation Track*, DOI: [10.1115/DETC2023-117055](https://doi.org/10.1115/DETC2023-117055).
- C91 Z. Xu , C. Hong , N. F. Soria Zurita [†], J. Gyory, G. Stump, H. Nolte , J. Cagan, and C. McComb. Adaptation and Challenges in Human-AI Partnership for the Design of Complex Engineering Systems, 2023. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Automation Conference*, DOI: [10.1115/DETC2023-115176](https://doi.org/10.1115/DETC2023-115176).
- C90 W. Xu , N. Grande Gutierrez, and C. McComb. MegaFlow2D: A Parametric Dataset for Machine Learning Super-resolution in Computational Fluid Dynamics Simulations., 2023. *2022 IEEE Workshop on Design Automation for CPS and IoT (DESTION)*. DOI: [10.1145/3576914.3587552](https://doi.org/10.1145/3576914.3587552).
- C89 C. McComb, P. Boatwright, and J. Cagan. Focus and Modality: Defining A Roadmap to Future AI-Human Teaming in Design., 2023. *International Conference on Engineering Design*, DOI: [10.1017/pds.2023.191](https://doi.org/10.1017/pds.2023.191).
- C88 S. Benthall, C. D. Carroll, Z. David, J. Liechty, A. Lujan, C. McComb, and N. Skar-Gislinge. Simulating Heterogeneous Portfolio Choices and Financial Market Outcomes., 2023. *AMP '22: Second Workshop in Agent-based Modeling & Policy-Making*, URL: <https://ceur-ws.org/Vol-3420/paper4.pdf>.
- C87 H. Nolte , E. Starkey, N. F. Sofia Zurita , and C. McComb. Student and Instructor Reflections on Integrating Short Mindfulness-Based Meditation Practices into a First-Year Engineering Design Course., 2022. *ASEE First-Year Engineering Education Conference*, URL: <https://peer.asee.org/42247>.
- C86 M. Baldwin , N. A. Meisel, and C. McComb. A Data-driven Approach for Multi-Topology Lattice Transitions., 2022. *Solid Freeform Fabrication Symposium*, DOI: [10.26153/tsw/44429](https://doi.org/10.26153/tsw/44429).
- C85 M. Agyemang [†], N. Radwan , S. Hicks , F. Azhar , A. Valencia-Romero [†], and C. McComb. Deriving Recommendations for the Use of Agent-Based Models in Engineering Design., 2022. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Theory and Methodology Conference*, DOI: [10.1115/DETC2022-90961](https://doi.org/10.1115/DETC2022-90961).
- C84 C. Toh, J. Cagan, K. Fu, D.A. McAdams, C. McComb, W. Seering, D. Thurston, and K. Wood. DTM Past, Present, and Future: Reflections on and by the Design Theory and Methodology Research Community., 2022. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Theory and Methodology Conference*, DOI: [10.1115/DETC2022-90003](https://doi.org/10.1115/DETC2022-90003).
- C83 J. T. Gyory, N. F. Soria Zurita [†], J. Cagan, and C. McComb. Comparing Nominal and Interacting Sub-Structured Teams in an Interdisciplinary Engineering Design Task., 2022. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Theory and Methodology Conference*, DOI: [10.1115/DETC2022-89623](https://doi.org/10.1115/DETC2022-89623).
- C82 N. Radwan , J. Menold, J. McTernan, K. W. Jablokow, and C. McComb. Towards Characterizing Cognitive Style Coping Behavior in Engineering Design., 2022. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Theory and Methodology Conference*, DOI: [10.1115/DETC2022-91148](https://doi.org/10.1115/DETC2022-91148).
- C81 S. Basu, C. McComb, M. Rifat, H. Sun, and S. Kumara. Process Monitoring: Distinguishing Defect Shapes by Strain Field Signatures., 2022. *North American Manufacturing Research Conference*, DOI: [10.1016/j.mfglet.2022.07.100](https://doi.org/10.1016/j.mfglet.2022.07.100).
- C80 B. Song [†], C. McComb, and F. Ahmed. Assessing Machine Learnability Of Image And Graph Representations For Drone Performance Prediction., 2022. *International Design Conference*, DOI: [10.1017/pds.2022.180](https://doi.org/10.1017/pds.2022.180).
- C79 A. Agrawal  and C. McComb. Comparing Strategies for Visualizing the High-Dimensional Exploration Behavior of CPS Design Agents., 2022. *2022 IEEE Workshop on Design Automation for CPS and IoT (DESTION)*, DOI: [10.1109/DESTION56136.2022.00017](https://doi.org/10.1109/DESTION56136.2022.00017).
- C78 G. Williams , N.A. Meisel, T.W. Simpson, and C. McComb. Analyzing Expert Design Cost Estimation for Additive Manufacturing., 2022. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Automation Conference*, DOI: [10.1115/DETC2022-90961](https://doi.org/10.1115/DETC2022-90961).
- C77 J. T. Gyory, N. F. Soria Zurita [†], J. Martin, C. Balon, C. McComb, K. Kotovsky, and J. Cagan. A Real-Time Artificial In-

- telligence Process Manager for Engineering Design., 2022. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Automation Conference*, DOI: [10.1115/DETC2022-88609](https://doi.org/10.1115/DETC2022-88609).
- C76 A. Raina , J. Cagan, and C. McComb. Self Learning Design Agent (SLDA): Enabling Deep Learning and Tree Search in Complex Action Spaces., 2022. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Automation Conference*, DOI: [10.1115/DETC2022-89740](https://doi.org/10.1115/DETC2022-89740).
- C75 A. Karji, J. Messner, R. Leicht, and C. McComb. Identification of the Barriers to Data-Centric Approach in the Construction Industry., 2022. *2022 Construction Research Congress*, DOI: [10.1061/9780784483978.102](https://doi.org/10.1061/9780784483978.102).
- C74 E. Evans  and C. McComb. Pitch imperfect: designing 3D printed claves to mimic the sound of their wooden counterparts., 2021. *Solid Freeform Fabrication Symposium*, DOI: [10.26153/tsw/17540](https://doi.org/10.26153/tsw/17540).
- C73 N. Holowsko  and C. McComb. Multi-Objective Model-Based Optimization of Pilot Decision Making for Urban Air Mobility., 2021. *ASME International Mechanical Engineering Congress and Exposition*, DOI: [10.1115/IMECE2021-69819](https://doi.org/10.1115/IMECE2021-69819).
- C72 B. Song [†], N. F. Soria Zurita [†], H. Nolte , H. Singh , J. Cagan, and C. McComb. Addressing Challenges to Problem Complexity: Effectiveness of AI Assistance During the Design Process, 2021. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Theory and Methodology Conference*, DOI: [10.1115/DETC2021-70467](https://doi.org/10.1115/DETC2021-70467).
- C71 H. Singh , G. Cascini, and C. McComb. Comparing Virtual and Face-to-Face Team Collaboration: Insights From an Agent-Based Simulation, 2021. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Theory and Methodology Conference*, DOI: [10.1115/DETC2021-66043](https://doi.org/10.1115/DETC2021-66043).
- C70 T. Mahan, P. Saravanan, S. Krishnakumar, H. Nolte , C. McComb, and J. Menold. When the Going Gets Tough: Exploring Changes in the Startup Landscape Due to the Challenges of 2020, 2021. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Theory and Methodology Conference*, DOI: [10.1115/DETC2021-71798](https://doi.org/10.1115/DETC2021-71798).
- C69 J. Pierce , G. Williams , T. W. Simpson, N. A. Meisel, and C. McComb. Stochastically-Trained Physics-Informed Neural Networks: Application to Thermal Analysis in Metal Laser Powder Bed Fusion, 2021. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Automation Conference*, DOI: [10.1115/DETC2021-70557](https://doi.org/10.1115/DETC2021-70557).
- C68 G. Stump, M. Yukish, J. Cagan, and C. McComb. Using Deep Learning to Simulate Multi-Disciplinary Design Teams, 2021. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Automation Conference*, DOI: [10.1115/DETC2021-70596](https://doi.org/10.1115/DETC2021-70596).
- C67 M. Li  and C. McComb. Using Physics-Informed Generative Adversarial Networks to Perform Super-Resolution for Multiphase Fluid Simulations, 2021. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Automation Conference*, DOI: [10.1115/DETC2021-66719](https://doi.org/10.1115/DETC2021-66719).
- C66 A. Agrawal , S. J. Won , T. Sharma, M. Deshpande, and C. McComb. A Multi-Agent Reinforcement Learning Framework for Intelligent Manufacturing with Autonomous Mobile Robots., 2021. *International Conference on Engineering Design*, DOI: [10.1017/pds.2021.17](https://doi.org/10.1017/pds.2021.17).
- C65 H. Singh , G. Cascini, and C. McComb. Comparing design outcomes achieved by teams of expert and novice designers through agent-based simulation., 2021. *International Conference on Engineering Design*, DOI: [10.1017/pds.2021.66](https://doi.org/10.1017/pds.2021.66).
- C64 J. T. Gyory, B. Song [†], J. Cagan, and C. McComb. Communication in AI-Assisted Teams During an Interdisciplinary Drone Design Problem., 2021. *International Conference on Engineering Design*, DOI: [10.1017/pds.2021.65](https://doi.org/10.1017/pds.2021.65).
- C63 S. Krishnakumar, C. Lauff, C. McComb, C. Berdanier, and J. Menold. Novice Designers' Use of Prototypes as Communication Tools., 2021. *International Conference on Engineering Design*, DOI: [10.1017/pds.2021.489](https://doi.org/10.1017/pds.2021.489).
- C62 S. Dhengre, J. Mathur, F. Oghazian, X. Tan, and C. McComb. Towards Enhanced Creativity in Interface Design through Automated Usability Evaluation., 2020. *Proceedings of the 11th International Conference on Computational Creativity*. URL: <http://computationalcreativity.net/iccc20/papers/114-iccc20.pdf>.
- C61 N. Radwan  and C. McComb. Using Adaption-Innovation Theory to Simulate Robustness in Design Teams., 2020. *Proceedings of the 11th International Conference on Computational Creativity*. URL: <http://computationalcreativity.net/iccc20/papers/129-iccc20.pdf>.
- C60 C. Berdanier, C. McComb, and W. Zhu. Natural Language Processing for Theoretical Framework Selection in Engineering Education Research., 2020. *IEEE Frontier in Education Conference*, DOI: [10.1109/FIE44824.2020.9274115](https://doi.org/10.1109/FIE44824.2020.9274115).
- C59 M. Alzayed , S. Miller, and C. McComb. Composing empathic design teams: a simulation-based investigation on the role of personality traits and risk-taking attitudes on team empathy., 2020. *Design Computing and Cognition '20*, DOI: [10.1007/978-3-030-90625-2_31](https://doi.org/10.1007/978-3-030-90625-2_31).
- C58 J. Park, E. Starkey, N. Choe, and C. McComb. Emergence of Engineering Design Self-efficacy in Engineering Identity Development., 2020. *Design Computing and Cognition '20*, DOI: [10.1007/978-3-030-90625-2_31](https://doi.org/10.1007/978-3-030-90625-2_31).
- C57 M. Alzayed , S. Miller, and C. McComb. Does empathy beget creativity? Investigating the role of trait empathy on idea generation and selection., 2020. *Design Computing and Cognition '20*, DOI: [10.1007/978-3-030-90625-2_26](https://doi.org/10.1007/978-3-030-90625-2_26).

- C56 H. Singh , C. McComb, and G. Cascini. Modelling the Dynamics of Influence on Individual Thinking during Idea Generation in Co-design Teams., 2020. *Design Computing and Cognition '20*, DOI: [10.1007/978-3-030-90625-2_3](https://doi.org/10.1007/978-3-030-90625-2_3).
- C55 B. Song †, N. F. Soria Zurita †, G. Zhang, G. Stump, C. Balon, S.W. Miller, M. Yukish, J. Cagan, and C. McComb. Toward Hybrid Teams: A Platform To Understand Human-Computer Collaboration During the Design of Complex Engineered Systems., 2020. *International Design Conference*, DOI: [10.1017/dsd.2020.68](https://doi.org/10.1017/dsd.2020.68).
- C54 L. Puentes , A. Raina , J. Cagan, and C. McComb. Modeling a Strategic Human Engineering Design Process: Human-Inspired Heuristic Guidance Through Learned Visual Design Agents., 2020. *International Design Conference*, DOI: [10.1017/dsd.2020.42](https://doi.org/10.1017/dsd.2020.42).
- C53 H. Nolte  and C. McComb. Identifying Stress Signatures Across the Engineering Design Process: Perceived Stress During Concept Generation, Concept Selection, and Prototyping., 2020. *International Design Conference*, DOI: [10.1017/dsd.2020.69](https://doi.org/10.1017/dsd.2020.69).
- C52 H. Singh , G. Cascini, and C. McComb. Analyzing the Effect of Self-Efficacy and Influencers on Design Teams., 2020. *International Design Conference*, DOI: [10.1017/dsd.2020.64](https://doi.org/10.1017/dsd.2020.64).
- C51 P. Khanolkar , A. Abraham, C. McComb, and S. Basu. Using Deep Image Colorization to Predict Microstructure-Dependent Strain Fields., 2020. North American Manufacturing Research Conference, DOI: [10.1016/j.promfg.2020.05.138](https://doi.org/10.1016/j.promfg.2020.05.138).
- C50 A. Mertens, C. McComb, and C. Toh. Towards an Understanding of Semantic Memory During Idea Generation., 2020. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Education Conference*, DOI: [10.1115/DETC2020-22577](https://doi.org/10.1115/DETC2020-22577).
- C49 B. Song †, E. Meinzer , A. Agrawal , and C. McComb. Topic Modeling and Sentiment Analysis of Social Media Data to Drive Experiential Redesign., 2020. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Automation Conference*, DOI: [10.1115/DETC2020-22567](https://doi.org/10.1115/DETC2020-22567).
- C48 S. Rismiller , J. Cagan, and C. McComb. Stochastic Stackelberg Games for Agent-Driven Robust Design., 2020. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Automation Conference*, DOI: [10.1115/DETC2020-22153](https://doi.org/10.1115/DETC2020-22153).
- C47 G. Williams , N. A. Meisel, T. W. Simpson, and C. McComb. Deriving Metamodels to Relate Machine Learning Quality to Repository Characteristics in the Context of Additive Manufacturing., 2020. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Automation Conference*, DOI: [10.1115/DETC2020-22518](https://doi.org/10.1115/DETC2020-22518).
- C46 H. Nolte , C. Berdanier, J. Menold, and C. McComb. Comparison of Exams and Design Practica for Assessment in First Year Engineering Design Courses., 2020. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Education Conference*, DOI: [10.1115/DETC2020-22054](https://doi.org/10.1115/DETC2020-22054).
- C45 S. Krishnakumar, C. Berdanier, C. McComb, M. Parkinson, and J. Menold. Comparing Student and Sponsor Perceptions of Interdisciplinary Teams' Capstone Performance., 2020. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Education Conference*, DOI: [10.1115/DETC2020-22099](https://doi.org/10.1115/DETC2020-22099).
- C44 G. Williams , L. Puentes , J. Nelson, J. Menold, C. Tucker, and C. McComb. Comparing Attribute- and Form-Based Machine Learning Techniques for Component Prediction., 2020. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Automation Conference*, DOI: [10.1115/DETC2020-22256](https://doi.org/10.1115/DETC2020-22256).
- C43 M. Alzayed , S. R. Miller, J. Menold, J. Huff, and C. McComb. Can Design Teams Be Empathically Creative? A Simulation-Based Investigation on the Role of Team Empathy on Concept Generation and Selection., 2020. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Theory and Methodology Conference*, DOI: [10.1115/DETC2020-22432](https://doi.org/10.1115/DETC2020-22432).
- C42 L. Puentes , J. Cagan, and C. McComb. Automated Heuristic Induction from Human Design Data., 2020. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Computers and Information in Engineering Conference*, DOI: [10.1115/DETC2020-22151](https://doi.org/10.1115/DETC2020-22151).
- C41 T. Maier , N. F. Soria Zurita †, E. Starkey, D. Spillane, J. Menold, and C. McComb. Analyzing the Characteristics of Cognitive-Assistant-Facilitated Ideation Groups., 2020. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Theory and Methodology Conference*, DOI: [10.1115/DETC2020-22555](https://doi.org/10.1115/DETC2020-22555).
- C40 J. E. Bracken, C. McComb, T. W. Simpson, and K. W. Jablowski. A Review of Part Filtering Methods for Additive Manufacturing., 2020. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Automation Conference*, DOI: [10.1115/DETC2020-22448](https://doi.org/10.1115/DETC2020-22448).
- C39 K. Goucher-Lambert and C. McComb. Using Hidden Markov Models to Uncover Underlying States in Neuroimaging Data for a Design Ideation Task., 2019. *International Conference on Engineering Design*, DOI: [10.1017/dsi.2019.193](https://doi.org/10.1017/dsi.2019.193).
- C38 T. Maier , J. Menold, and C. McComb. Towards an Ontology of Cognitive Assistants., 2019. *International Conference on Engineering Design*, DOI: [10.1017/dsi.2019.270](https://doi.org/10.1017/dsi.2019.270).

- C37 J. Nelson, T. Mahan, C. McComb, and J. Menold. The Prototyping Behaviors Of Startups: Exploring The Relationship Between Prototyping Behavior And The Financial Success Of Startups., 2019. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Theory and Methodology Conference*, DOI: [10.1115/DETC2019-97475](https://doi.org/10.1115/DETC2019-97475).
- C36 S. Prakash, T. Mahan, G. Williams , C. McComb, J. Menold, and C. Tucker. On The Analysis Of A Compromised Additive Manufacturing System Using Spatio-Temporal Decomposition., 2019. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Automation Conference*, DOI: [10.1115/DETC2019-97732](https://doi.org/10.1115/DETC2019-97732).
- C35 A. Raina , C. McComb, and J. Cagan. Learning To Design From Humans: Imitating Human Designers Through Deep Learning., 2019. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Automation Conference*, DOI: [10.1115/DETC2019-97399](https://doi.org/10.1115/DETC2019-97399).
- C34 D. Kaweesa, C. McComb, J. Menold, S. Ritter, and N. A. Meisel. Evaluating Idea Quantity And Variety When Using Digital Collaboration Tools To Support Brainstorming In Non-Collocated Teams., 2019. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Education Conference*, DOI: [10.1115/DETC2019-98203](https://doi.org/10.1115/DETC2019-98203).
- C33 K. Colbry, C. McComb, J. Rojewski, A. Briliyanti, and D. Colbry. Engineering Futures: Updating A Successful Professional Development Program To Address New Challenges., 2019. *ASEE 2019 Annual Conference and Exhibition*, DOI: [10.18260/1-2-V-32724](https://doi.org/10.18260/1-2-V-32724).
- C32 P. Saravanan, C. Hipple, J. Wang, C. McComb, and J. Menold. Decision-Making In The Prescription Of Orthotics And Prosthetics For Partial-Foot Amputees., 2019. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Automation Conference*, DOI: [10.1115/DETC2019-97470](https://doi.org/10.1115/DETC2019-97470).
- C31 E. Evans , J. Menold, and C. McComb. Critical Thinking In The Design Classroom: An Analysis Of Student Design Reflections., 2019. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Education Conference*, DOI: [10.1115/DETC2019-97533](https://doi.org/10.1115/DETC2019-97533).
- C30 N. Meisel, S. Ritter, C. McComb, and J. Menold. Creation and Implementation of a Project Framework to Improve Cornerstone Engineering Design., 2019. *ASEE First-Year Engineering Education Conference*, URL: <https://peer.asee.org/33687>.
- C29 J. Banerjee, M. Mundale, A. Sachche, and C. McComb. Complexity Reduction in Mass Customization To Facilitate Better Decision Support., 2019. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Automation Conference*, DOI: [10.1115/DETC2019-97369](https://doi.org/10.1115/DETC2019-97369).
- C28 S. Lapp , K. W. Jablowski, and C. McComb. Collaborating with Style: Using an Agent-Based Model to Simulate Cognitive Style Diversity in Problem Solving Teams., 2019. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference Design Theory and Methodology Conference*, DOI: [10.1115/DETC2019-97932](https://doi.org/10.1115/DETC2019-97932).
- C27 T. Maier , V. Donghia, C. Chen, J. Menold, and C. McComb. Assessing the Impact of Cognitive Assistants on Mental Workload in Simple Tasks., 2019. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Theory and Methodology Conference*, DOI: [10.1115/DETC2019-97543](https://doi.org/10.1115/DETC2019-97543).
- C26 G. Williams , J. O'Brien, A. Mezghani, M. Eachus, N.A. Meisel, and C. McComb. A Standardized Framework for Communicating and Modelling Parametrically Defined Mesostructure Patterns., 2019. *30th Annual International Solid Freeform Fabrication Symposium*, DOI: [10.26153/tsw/17348](https://doi.org/10.26153/tsw/17348).
- C25 A. Bayrak, C. McComb, J. Cagan, and K. Kotovsky. A Differential Game Approach to Dynamic Competitive Decisions Toward Human-Computer Collaboration., 2019. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Theory and Methodology Conference*, DOI: [10.1115/DETC2019-97619](https://doi.org/10.1115/DETC2019-97619).
- C24 J. Ostrander, L. Ryan, S. Dhengre, C. McComb, T. W. Simpson, and N. A. Meisel. A Comparative Study Of Virtual Reality And Computer-Aided Design To Evaluate Parts For Additive Manufacturing., 2019. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference – Design Automation Conference*, DOI: [10.1115/DETC2019-97480](https://doi.org/10.1115/DETC2019-97480).
- C23 C. Murphy , N. A. Meisel, T. W. Simpson, and C. McComb. Using Autoencoded Voxel Patterns to Predict Part Mass, Required Support Material, and Build Time., 2018. *29th Annual International Solid Freeform Fabrication Symposium*, DOI: [10.26153/tsw/17158](https://doi.org/10.26153/tsw/17158).
- C22 C. Berdanier, E. Baker, W. Wang, and C. McComb. Opportunities for Natural Language Processing in Qualitative Engineering Education Research: Two Examples., 2018. *2018 IEEE Frontiers in Education Conference*, DOI: [10.1109/FIE.2018.8658747](https://doi.org/10.1109/FIE.2018.8658747).
- C21 C. McComb, C. Berdanier, and J. Menold. Design Practica as Authentic Assessments in First-year Engineering Design Courses, 2018. *ASEE First-Year Engineering Education Conference*, URL: <https://peer.asee.org/31391>.
- C20 A. Raina , C. McComb, and J. Cagan. Design Strategy Transfer in Cognitively-Inspired Agents, 2018. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference - Design Automation Conference*, DOI: [10.1115/DETC2018-97475](https://doi.org/10.1115/DETC2018-97475).

- tion Conference, DOI: [10.1115/DETC2018-85599](https://doi.org/10.1115/DETC2018-85599).
- C19 L. Puentes , C. McComb, and J. Cagan. A Two-Tiered Grammatical Approach For Agent-Based Computational Design, 2018. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference - Design Automation Conference*, DOI: [10.1115/DETC2018-85648](https://doi.org/10.1115/DETC2018-85648).
- C18 J. Menold, C. Berdanier, C. McComb, E. Hocker, and L. Gardner. "Thus, I had to go with what I had": A Multiple Methods Exploration of Novice Designers Articulation of Prototyping Decisions, 2018. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference - Design Theory and Methodology Conference*, DOI: [10.1115/DETC2018-85800](https://doi.org/10.1115/DETC2018-85800).
- C17 T. Maier  and C. McComb. Designing Improved Teams for Crowdsourced Competitions., 2018. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference - Design Theory and Methodology Conference*, DOI: [10.1115/DETC2018-85457](https://doi.org/10.1115/DETC2018-85457).
- C16 M. Alzayed , C. McComb, S. Hunter, and S. Miller. Helping Teams Expand the Breadth of Their Solution Space Through Product Dissection: A Simulation Based Investigation., 2018. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference - Design Education Conference*, DOI: [10.1115/DETC2018-85832](https://doi.org/10.1115/DETC2018-85832).
- C15 C. McComb. , 2018. Towards the Rapid Design of Engineered Systems Through Deep Neural Networks," *Design Computing and Cognition '18*, DOI: [10.1007/978-3-030-05363-5_1](https://doi.org/10.1007/978-3-030-05363-5_1).
- C14 F.M. Tehrani, C. McComb, and N. Papavasiliou. Application of Project-based Learning within the Context of Sustainable Development in Education of International Engineer Citizens., 2017. *Iran International Conference on Engineering Education*.
- C13 C. McComb, J. Cagan, and K. Kotovsky. Validating a Tool for Predicting Problem-Specific Optimized Team Characteristics, 2017. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference - Design Theory and Methodology Conference*, DOI: [10.1115/DETC2017-67430](https://doi.org/10.1115/DETC2017-67430).
- C12 C. McComb, J. Cagan, and K. Kotovsky. Eliciting Configuration Design Heuristics with Hidden Markov Models, 2017. *International Conference on Engineering Design*, DOI: [10.17605/OSF.IO/ZUDHE](https://doi.org/10.17605/OSF.IO/ZUDHE).
- C11 C. McComb, Johnson, N.G., and B.T. Gorman. Scenario-based Robustness Analysis of Optimized I.D.E.-style Treadle Pump Designs, 2016. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference - Design for Manufacturing and Life Cycle Conference*, DOI: [10.1115/DETC2016-60127](https://doi.org/10.1115/DETC2016-60127).
- C10 C. McComb, J. Cagan, and K. Kotovsky. Linking Properties of Design Problems to Optimal Team Characteristics, 2016. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference - Design Theory and Methodology Conference*, DOI: [10.1115/DETC2016-59333](https://doi.org/10.1115/DETC2016-59333).
- C9 C. McComb, J. Cagan, and K. Kotovsky. Utilizing Markov Chains to Understand Operation Sequencing in Design Tasks, 2016. *Design Computing and Cognition '16*, DOI: [10.1007/978-3-319-44989-0_22](https://doi.org/10.1007/978-3-319-44989-0_22).
- C8 C. McComb, J. Cagan, and K. Kotovsky. Studying Human Design Teams through Computational Teams of Simulated Annealing Agents, 2015. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference - Design Theory and Methodology Conference*, DOI: [10.1115/DETC2015-46545](https://doi.org/10.1115/DETC2015-46545).
- C7 C. McComb, J. Cagan, and K. Kotovsky. Heterogeneous Simulated Annealing Teams: An Optimizing Search Algorithm Inspired by Engineering Design Teams, 2015. *International Conference on Engineering Design*, DOI: [10.17605/OSF.IO/8K2CR](https://doi.org/10.17605/OSF.IO/8K2CR).
- C6 C. McComb, K. Goucher-Lambert, and J. Cagan. Fairness and Manipulation: An Empirical Study of Arrow's Impossibility Theorem, 2015. *International Conference on Engineering Design*, DOI: [10.17605/OSF.IO/FYR6S](https://doi.org/10.17605/OSF.IO/FYR6S).
- C5 C. McComb, N.G. Johnson, P.S. Santaefemia, and K. Shimada. Identifying Technical and Economic Improvements to the Moneymaker Hip Pump Through Multi-Objective Optimization, 2014. *IEEE - Global Humanitarian Technology Conference*, DOI: [10.1109/GHTC.2014.6970302](https://doi.org/10.1109/GHTC.2014.6970302).
- C4 C. McComb, J. Cagan, and K. Kotovsky. Quantitative Comparison of High- and Low-Performing Teams in a Design Task Subject to Drastic Changes, 2014. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference - Design Theory and Methodology Conference*, DOI: [10.1115/DETC2014-34653](https://doi.org/10.1115/DETC2014-34653).
- C3 P.S. Santaefemia, N.G. Johnson, C. McComb, and K. Shimada. Improving Irrigation in Remote Areas: Multi-Objective Optimization of a Treadle Pump, 2014. *ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference - Design Automation Conference*, DOI: [10.1115/DETC2014-35463](https://doi.org/10.1115/DETC2014-35463).
- C2 C. McComb and F.M. Tehrani. Research and Practice Group Methodology: A Case Study in Student Success, 2014. *ASEE Pacific-Southwest Conference*, DOI: [10.17605/OSF.IO/9NH7Q](https://doi.org/10.17605/OSF.IO/9NH7Q).
- C1 C. McComb, M. Lawson, and Y.H. Yu. Development and Verification of a Wave Energy Converter Simulation Tool, 2013. *6th Annual Global Marine Renewable Energy Conference - Marine Energy Technology Symposium*, DOI: [10.17605/OSF.IO/JBW3Z](https://doi.org/10.17605/OSF.IO/JBW3Z).

Book Chapters

- B1 Z. Sha, Y. Lu, C. McComb, Z. Yang, A. Tran, D. Liu, F. Ahmed, B. Song [†], B. O'Halloran, B. Lane, A. Mishra, H. Yeung, R. M. Lawton, L. Mirabella, R. Rai, and D. Wu. Promoting Data Science in Mechanical Engineering Research and Education: An Exploration of the Hackathon Mechanism, 2022. in *Emotional Engineering*, vol. 9, DOI: [10.1007/978-3-031-05867-7_14](https://doi.org/10.1007/978-3-031-05867-7_14).

Published Abstracts

- A5 W. Xu , C. McComb, and N. Grande Gutiérrez. Graph-Based Domain Decomposition for Scalable Cardiovascular Flow Super-Resolution, 2025. *Bulletin of the American Physical Society*.
- A4 A. Noorghasemi , M. Xiao, and C. McComb. Evaluating Community Well-being and Resilience via Agent-Based Models, 2024. *2024 American Geophysical Union Fall Meeting*.
- A3 W. Xu , C. McComb, and N. Grande Gutiérrez. Adaptive Local Domain Decomposition for Learning Large-Scale Multi-physics Numerical Simulations, 2024. *Bulletin of the American Physical Society*.
- A2 M. Xiao, Z. Wang, D. Nicolsky, V. E. Romanovsky, C. McComb, and L. M. Farquharson. Arctic Coastal Hazard Index (ACHI): A Framework for Assessing Vulnerability to Permafrost Thawing, Coastal Erosion, and Flooding in the Arctic, 2023. *2023 American Geophysical Union Fall Meeting*.
- A1 W. Xu , C. McComb, and N. Grande Gutiérrez. Taylor series error correction network for super-resolution of discretized fluid solutions, 2023. *Bulletin of the American Physical Society*.

Editorials and Commentary

- E8 W. Chen, V. R. Krishnamurthy, Y. Lu, J. Luo, C. McComb, S. K. Ravi, and Z. Sha. Special Issue on Generative AI for Design, Manufacturing Processes, and Materials Systems: Part II, 2026. *Journal of Computing and Information Science in Engineering*, DOI: [10.1115/1.4072352](https://doi.org/10.1115/1.4072352).
- E7 W. Chen, V. R. Krishnamurthy, Y. Lu, J. Luo, C. McComb, S. K. Ravi, and Z. Sha. Special Issue on Generative AI for Design, Manufacturing Processes, and Materials Systems: Part I, 2026. *Journal of Computing and Information Science in Engineering*, DOI: [10.1115/1.4072094](https://doi.org/10.1115/1.4072094).
- E6 F. Ahmed, C. Picard, W. Chen, C. McComb, P. Wang, I. Lee, T. Stankovic, D. Allaire, and S. Menzel. Design by Data: Cultivating Datasets for Engineering Design, 2024. *Journal of Mechanical Design*, vol. 147, issue 4, pp. 040301-1 – 040301-6, DOI: [10.1115/1.4067871](https://doi.org/10.1115/1.4067871).
- E5 C. McComb. Feature Introduction from the Tau Beta Pi Diversity, Equity & Inclusion Committee, 2023. *Tau Beta Pi's The Bent Magazine*, Spring Issue, URL: <https://www.tbp.org/pubs/Features/Sp23DEI.pdf>.
- E4 M. Moghaddam, T. Marion, K. Holtta-Otto, K. Fu, A. Olechowski, and C. McComb. Emerging Technologies and Methods for Early-Stage Product Design and Development, 2023. *ASME Journal of Mechanical Design*, vol. 145, issue 4, pp. 040301-1 – 040301-4, DOI: [10.1115/1.4056744](https://doi.org/10.1115/1.4056744).
- E3 Y. F. Zhao, S. Elgeti, J. K. Guest, C. McComb, J. Norato, and D. Toshniwal. Special Issue: Design for Advanced Manufacturing., 2023. *ASME Journal of Mechanical Design*, vol. 145, issue 2, pp. 010301-1 – 010301-3, DOI: [10.1115/1.4056169](https://doi.org/10.1115/1.4056169).
- E2 J. T. Allison, M.-A. Cardin, C. McComb, M.Y. Ren, D. Selva, C. Tucker, P. Witherell, and Y.F. Zhao. Special Issue: Artificial Intelligence and Engineering Design., 2022. *ASME Journal of Mechanical Design*, vol. 144, issue 2, pp. 020301-1 – 020301-4, DOI: [10.1115/1.4053111](https://doi.org/10.1115/1.4053111).
- E1 J. Cagan and C. McComb. Designing a New AI, 2022. *Issues in Science and Technology*, URL: <https://issues.org/artificial-intelligence-liminal-design-darpa-paschkewitz-forum/>.

Technical Reports and Trade Publications

- T5 L. Alessa, C. McComb, F. Scherra, D. Martin, C. Fleener, B. Dunkle, J. Taylor, S. Russell, M. C. Serreze, F. Roberts, and A. Kliskey. The Climate Adaptation Primer—Arctic, 2024. Joint AFPDD and AWC Wargaming Outcome #1.
- T4 J. Barnett, B. Callam, R. Chelluri, E. Crivella, M. Dong, K. Kelly, C. McComb, M. Mehta, R. Mikaelsson, Y. Netser, A. Polk, T. Randall, D. Rigaud, E. Smith, M. Swaine, P. Tang, A. Valencia-Romero [†], Y. Wang, J. Woodward, and J. Xing. Opportunities for Artificial Intelligence, Machine Learning, and Data Science in Advanced Work Packaging., 2023. *Construction Industry Institute Knowledge Base*, Final Report 391, URL: <https://construction-institute.org/opportunities-for-artificial-intelligence-machine-learning-and-data-science-in-advanced-work-packaging>.
- T3 S. Hicks , L. Alessa, and C. McComb. Agents and the Arctic: The Case for Increased Use of Agent-Based Modeling to Study Permafrost., 2021. *The Arctic Institute*, URL: <https://www.thearcticinstitute.org/agents-arctic-case-increased-use-agent-based-modeling-study-permafrost/>.
- T2 M. Xiao, L. Alessa, L.M. Farquharson, D. Nicolsky, B.M. Jones, V.E. Romanovsky, A. Jensen, C. McComb, X. Zhang, M. Liew, and X. Ji. Infrastructure and Community Resilience in the Changing Arctic: Status, Challenges, and Research

Needs., 2021. *The Arctic Institute*, URL: <https://www.thearcticinstitute.org/infrastructure-community-resilience-changing-arctic-status-challenges-research-needs/>.

- T1 W. Adebakin, J. Banda, S. Barrera, M. Carrancho, J. C. Cruz, R. Favro, S. Geyer, D. Guerard, B. Hayes, A. Karji, R. Leicht, D. J. Maestas, C. McComb, K. R. McMillion, J. I. Messner, K. Parker, R. Roske, and S. Scott. Applying a Data-centric Approach to the Collaborative Execution of Capital Projects., 2021. *Construction Industry Institute Knowledge Base*, Final Report 391, URL: <https://www.construction-institute.org/applying-a-data-centric-approach-to-the-collaborative-execution-of-capital-projects>.

Grants and Contracts

Principal Investigator

External

1. EAGER: Portfolio-Based Integrated Design Paradigm for Increasing Supply Chain Resilience, National Science Foundation (EDSE), May 2026 – April 2028, \$151,012 (Co-PI: Peter Zhang).
2. Enhancing Human Work in Product Development Through Generative AI, Boeing, November 2025 – November 2026, \$324,492.
3. Agreement Regarding Sponsorship of the Human+AI Design Initiative at Carnegie Mellon University, Ansys, November 2025 – June 2026, \$50,000.
4. Generative AI In the Engineering Ecosystem, Boeing, August 2025 – December 2025, \$2,000.
5. Design and Development of a RAG Chatbot to Support Teaching, University of Texas at Austin, January 2025 – June 2025, \$5,000.
6. Agreement Regarding Sponsorship of the Human+AI Design Initiative at Carnegie Mellon University, Ansys, November 2024 – June 2025, \$50,000.
7. Automated Digital Design: Super-Resolution of Engineering Simulations, Eaton Corporation, October 2022 – March 2025, \$304,451 (Co-PI: Noelia Grande Gutiérrez).
8. Defining Opportunities to Leverage Artificial Intelligence, Machine Learning, and Data Analytics Applications for AWP, Construction Industry Institute, August 2021 – July 2023, \$230,000.
9. Part Screening and Redesign for Additive Manufacturing, Rexnord Corporation, August 2019 – August 2020, \$120,000 (Co-PI: Timothy Simpson at The Pennsylvania State University).
10. Investigating the Effectiveness of Machine Learning Paradigms for Training Novice Designers in Rapidly Evolving Digital Manufacturing, National Science Foundation, August 2018 – August 2023, \$424,734 (Co-PIs: Nicholas Meisel and Timothy Simpson at The Pennsylvania State University).
11. Machine Learning for Additive Manufacturing Applications, NVIDIA Corporation, August 2018 – August 2019, In-kind grant: NVIDIA Quadro P6000 GPU.
12. Rapid Evaluation and Synthesis of Engineering Systems, NVIDIA Corporation, August 2017 – August 2018, In-kind grant: NVIDIA Quadro P5000 GPU.

Internal

1. Collaborative Grand Challenge Research: Achieving Next-Generation Energy Solutions with the BOARD (Board Of Agents for R&D) Framework Machine Learning for Additive Manufacturing Applications, Department of Mechanical Engineering, August 2025 – July 2027, \$160,000 plus two collaborative students (Co-PIs: Jeremy Michalek, Reeya Jayan, Andrew Spielberg, and Nikolas Martelaro).

Co-Principal Investigator

External

1. Human-Centered AI as a Pathway to Re-envisioning K-12 Education, PI: Katharine Roche (West Allegheny School District), Remake Learning and the Grable Foundation, August 2025 – May 2026, \$25,000.
2. SAI: Integrating Social Dynamics into Cyber-Physical Systems for Enhanced Facilities Design, Maintenance, and Operation, PI: Katherine Flanagan (CMU), National Science Foundation, September 2024 – August 2027, \$749,775.
3. Understanding Financial Market Impact on the Macroeconomy, Defense Advanced Research Projects Agency, PI: John Liechty (The Pennsylvania State University), February 2022 – October 2022, \$606,385.
4. Human Error Reduction in Mack Truck Operations, PA Manufacturing Innovation Program, PI: Ling Rothrock (The Pennsylvania State University), May 2020 – May 2021, \$170,399 (including matching funds from Mack Trucks).
5. RAPID: Investigating Effects of the Disruptive Shift to Online Courses on Identity Formation and Self-Efficacy of Students and Faculty in a First-Year Engineering Course, National Science Foundation, PI: Jessica Menold (The Pennsylvania State University), August 2020 – August 2021, \$100,000.

nia State University), May 2020 – May 2021, \$196,136.

6. Smart Model-centric Life Cycle Approach to Collaborative Execution of Capital Projects, Construction Industry Institute, PI: John Messner (The Pennsylvania State University), September 2019 – September 2021, \$210,225.
7. NNA Track 1: Collaborative Research: Resilience and Adaptation to the Effects of Permafrost Degradation Induced Coastal Erosion, National Science Foundation, PI: Ming Xiao (The Pennsylvania State University), September 2019 – August 2024, \$2,999,949.
8. Using Engineering Design Prototypes to Improve the Communication and Argumentation Skills of Undergraduate Engineering Students, National Science Foundation, PI: Jessica Menold (The Pennsylvania State University), July 2019 – June 2022, \$300,000.
9. Collaborative Research: Hybrid-Compatible Deformation Processing of Performance Critical Components, National Science Foundation, PI: Saurabh Basu (The Pennsylvania State University), September 2018 – August 2021 (added as Co-PI in August 2020), \$321,550.
10. A Hybrid Computer Platform to Design, Guide and Partner with Humans in the Team Problem-solving Process, Defense Advanced Research Projects Agency, PI: Jonathan Cagan (CMU), August 2017 – December 2021, \$6,076,939.

Internal

1. Human Systems Engineering for Safe, Efficient, and Decentralized Remote Operations of Automated Nuclear Microreactors, Pennsylvania Infrastructure Technology Alliance, PI: Pingbo Tang, July 2024 – May 2025, \$80,000.
2. Proactive Reduction of Time and Resource Wastes of Thermoset Composite Bats Production Systems through Model-based Sensor Planning and Interpretable Data Analytics, Manufacturing Futures Institute, PI: Pingbo Tang, January 2024 – December 2024, \$110,863.
3. Multimodal Fusion for Real-time Monitoring and Communication Between Vulnerable Road Users and Transportation Infrastructure, Pennsylvania Infrastructure Technology Alliance, PI: Katherine Flanigan, August 2023 – August 2024, \$76,608.
4. Cyber-Physical-Social Digital Twins for Managing Humans in Advanced Manufacturing Processes, Manufacturing Futures Institute, PI: Katherine Flanigan, January 2023 – December 2023, \$124,668.
5. Cyber-Physical System Framework for Designing and Managing Social Infrastructure, Pennsylvania Infrastructure Technology Alliance, PI: Katherine Flanigan, August 2022 – August 2023, \$76,000.

Faculty Associate

External

1. NSCORE: Neuro-Symbiotic Co-Designer Using Oracle-Guided Synthesis and Reinforcement Learning, Defense Advanced Research Projects Agency, PI: Susmit Jha (SRI International), October 2020 – September 2024, \$5,625,733.

Awards, Prizes, Honors

1. 2026 American Society of Mechanical Engineers (ASME) Design Automation Young Investigator Award. *Recognizes noteworthy early-career contributions to design automation.*
2. 2026 – 2027 Engineering Leadership Fellow, College of Engineering, Carnegie Mellon University. *Selected for a nine-month cohort-based program focused on faculty leadership strengths and organizational dynamics.*
3. 2025 Best Professor, CMU Mechanical Engineering Senior Class. *Selected by graduating CMU Mechanical Engineering seniors for excellence in teaching.*
4. 2025 American Society of Mechanical Engineers (ASME) Journal of Mechanical Design (JMD) Associate Editor of the Year. *Recognizes outstanding contributions in the quantity, quality, and turnaround time of papers coordinated for the journal.*
5. 2024 American Society of Mechanical Engineers (ASME) Journal of Mechanical Design (JMD) Associate Editor of the Year. *Recognizes exceptional reviewer selection, timeliness, review quality, and assignment volume.*
6. 2024 Outstanding Academic Award, Construction Industry Institute. *Recognizes innovative academic contributions with significant construction-industry impact.*
7. 2025 Resolution of Appreciation, The Tau Beta Pi Association. *Expresses formal appreciation for volunteer service to Tau Beta Pi.*
8. 2024 – 2025 Generative AI Teaching As Research Fellowship, The Eberly Center for Teaching Excellence & Educational Innovation. *Supports studying generative AI teaching innovations and their effects on learning.*
9. 2023 Tau Beta Pi Distinguished Service Award, The Tau Beta Pi Association. *Recognizes ten years of service as Tau Beta Pi District 3 Director.*

10. 2022–2023 Donald L. and Rhonda Struminger Junior Faculty Fellowship, Department of Mechanical Engineering. *Recognizes exceptional dedication to undergraduate engineering education.*
11. 2022 American Society of Mechanical Engineers (ASME) Journal of Mechanical Design (JMD) Guest Associate Editor Award. *Recognizes exemplary guest service managing peer review for JMD special issues.*
12. Best Paper in December 2022 Issue of American Society of Mechanical Engineers (ASME) Journal of Computing and Information Science in Engineering: “Design for Artificial Intelligence: Proposing a Conceptual Framework Grounded in Data Wrangling”. *Selected as the December 2022 issue’s featured JCISE Spotlight paper.*
13. 2nd Place Best Paper Award, 2022 American Society of Mechanical Engineers (ASME) Design Theory and Methodology Conference: “Towards Characterizing Cognitive Style Coping Behavior in Engineering Design”. *Ranked second in ASME’s 2022 Design Theory and Methodology paper competition.*
14. 2nd Place Best Paper Award, 2022 American Society for Engineering Education (ASEE) First Year Engineering Experience Conference: “Student and Instructor Reflections on Integrating Short Mindfulness-Based Practices into a First-Year Engineering Design Course”. *Ranked second at ASEE’s 2022 First-Year Engineering Experience paper competition.*
15. Reviewers’ Favorite, 2021 International Conference on Engineering Design: “The Effects of Artificial Intelligence Agents on Team Communication During Solving an Interdisciplinary Drone Design Problem”. *Identifies papers in ICED’s top 10 percent by reviewer scores.*
16. 2021 American Society of Mechanical Engineers (ASME) Journal of Mechanical Design (JMD) Guest Associate Editor Award. *Recognizes exemplary guest service managing peer review for JMD special issues.*
17. 2021 American Society of Mechanical Engineers (ASME) Design Theory and Methodology Young Investigator Award. *Honors meritorious contributions advancing design theory and methodology.*
18. 2021 James L. Henderson, Jr. Memorial Professorship in Engineering, The Pennsylvania State University. *Recognizes outstanding early-career engineering faculty and supports continued impact.*
19. 2019 Outstanding Faculty Mentor Award, Student Research and Engagement Office, Penn State University. *Recognizes exceptional mentorship of Penn State undergraduate researchers.*
20. Design Science Journal Excellence in Design Science Paper Award, 2019 International Conference on Engineering Design: “Using Hidden Markov Models to Uncover Underlying States in Neuroimaging Data for a Design Ideation Task”. *Recognizes ICED papers exhibiting excellence as articulated by Design Science.*
21. Reviewers’ Favorite, 2019 International Conference on Engineering Design: “Using Hidden Markov Models to Uncover Underlying States in Neuroimaging Data for a Design Ideation Task”. *Identifies papers in ICED’s top 10 percent by reviewer scores.*
22. 2018 Journal of Mechanical Design Reviewer with Distinction Award, American Society of Mechanical Engineers. *Recognizes meritorious reviewing by volume, quality, and turnaround time.*
23. Best Paper in Computing, Design Computing and Cognition ’18: “Towards the Rapid Design of Engineered Systems Through Deep Neural Networks”. *Recognizes the conference’s best paper in the computing category.*
24. Best Dissertation Award 2017, Department of Mechanical Engineering, Carnegie Mellon University. *Recognizes the year’s outstanding CMU Mechanical Engineering doctoral dissertation.*
25. Best Paper in Computing, Design Computing and Cognition ’16: “Utilizing Markov Chains to Understand Operation Sequencing in Design Tasks”. *Recognizes the conference’s best paper in the computing category.*
26. Reviewers’ Favorite, 2015 International Conference on Engineering Design: “Heterogeneous Simulated Annealing Teams: An Optimizing Search Algorithm Inspired by Engineering Design Teams”. *Identifies papers in ICED’s top 10 percent by reviewer scores.*
27. Reviewers’ Favorite, 2015 International Conference on Engineering Design: “Fairness and Manipulation: An Empirical Study of Arrow’s Impossibility Theorem”. *Identifies papers in ICED’s top 10 percent by reviewer scores.*
28. 2013 NSF Graduate Research Fellowship. *Recognizes outstanding graduate researchers with potential for significant STEM contributions.*
29. 2012 Tau Beta Pi King Fellowship. *Recognizes outstanding volunteer participation in engineering technical societies.*
30. 2012 Lyles College of Engineering Dean’s Medalist. *Honors the college’s outstanding graduating engineer for academics, achievement, and service.*

Professional Activities

Seminars

1. “AI and the Battle for the Soul of Design,” NSF AI Institute for Societal Decision Making, January 29, 2026.
2. “AI and the Battle for the Soul of Design,” CDFAM 23 NYC - Computational Design (+DfAM) Symposium, November 5, 2025.

3. "Design at the Human AI Frontier," Carnegie Mellon University Faculty Insights, October 8, 2025.
4. "HUYER: The HyForm Uncrewed Vehicle Engineering Repository," 13th ASME Journal of Mechanical Design Webinar on Datasets in Engineering Design, July 14, 2025.
5. "The Battle for the Soul of Design," Boeing Commercial Aircraft Product Development, June 18, 2025.
6. "Exploring Modes of Human+AI Teaming for Better Engineering and Design," Department of Mechanical Engineering, University of Maryland, April 21, 2025.
7. "The Battle for the Soul of Design," Promotion Seminar, CMU Department of Mechanical Engineering, April 18, 2025.
8. "Exploring Modes of Human+AI Teaming for Better Engineering and Design," Carnegie Mellon University iii Seminar Series, April 1, 2025.
9. "Exploring Modes of Human+AI Teaming for Better Engineering and Design," Purdue University Mechanical Engineering Seminar, January 31, 2025.
10. "Empowering Humanity: Responsible AI and the Future of Human-AI Interaction," Faculty of Mechanical Engineering, Bosphorous University, December 7, 2024.
11. "Exploring Modes of Human+AI Teaming for Better Engineering and Design," Faculty of Mechanical Engineering, Istanbul Technical University, December 6, 2024.
12. "Elevating Structural Steel with AI Engineering," Keynote at Structural Steel Day, Turkish Structural Steel Association, December 4, 2024.
13. "A Tool, A Teammate, A Coach: Human+AI Collaboration in Design," Mechanical & Material Colloquium, Florida International University, October 29, 2024.
14. "A Tool, A Teammate, A Coach: Human+AI Collaboration in Design," Boeing Distinguished Researcher and Scholar Seminar (B-DRASS) Series, The Boeing Company, September 24, 2024.
15. "A Tool, A Teammate, A Coach: Human+AI Collaboration in Design," Byron Short Seminar Series, Walker Department of Mechanical Engineering, University of Texas Austin, September 20, 2024.
16. "Computation, Automation, and Artificial Intelligence in the Design Classroom," Invited Keynote, Design Education Conference, ASME International Design Engineering Technical Conferences and Computers in Engineering Conference, August 26, 2024.
17. "Engineering with Artificial Intelligence: Tools, Teammates, and Coaches," Keynote at Construction Industry Institute Annual Conference, July 30, 2024.
18. "Opportunities for Human+AI Teaming to Enhance Diversity, Equity, and Inclusion," Boeing Familia Seminar Series, The Boeing Company, June 26, 2024.
19. "A Tool, A Teammate, A Coach: Human+AI Collaboration in Design," Keynote at 6th Workshop on Design Automation for CPS and IoT (DESTION 2024), IEEE/ACM CPS-IoT, May 12, 2024.
20. "Human-AI Collaboration for Design and Construction," Workshop on Revolutionizing Engineering with AI and Digital Twins, Carnegie Mellon University, April 1, 2024.
21. "Enhancing Human+AI Teaming for Better Engineering and Design" Carnegie Mellon University iii Seminar Series, March 22, 2024.
22. "Applied Computing in the Design Research Collective," Applied Computing Symposium, University of Nebraska, March 5, 2024.
23. "Enhancing Human+AI Teaming for Better Engineering and Design," Carnegie Mellon University Africa, February 15, 2024.
24. "Learning Across the Digital Thread: Machine Learning for Advanced Manufacturing and Design," AI Institute in Dynamic Systems, University of Washington, November 1, 2023.
25. "A Tool, A Teammate, A Coach: Human+AI Collaboration in Design," Department of Human-Centered Design and Engineering, University of Washington, October 31, 2023.
26. "Learning Across the Digital Thread: Machine Learning for Advanced Manufacturing and Design," Department of Mechanical and Aerospace Engineering, University of California Irvine, October 25, 2023.
27. "A Tool, A Teammate, A Coach: Human+AI Collaboration in Design," Department of Electrical and Computer Engineering, University of California Los Angeles, October 24, 2023.
28. "Learning Across the Digital Thread: Machine Learning for Advanced Manufacturing and Design," School for Engineering of Matter, Transport and Energy, Arizona State University, October 13, 2023.
29. "A Tool, A Teammate, A Coach: Human+AI Collaboration in Design," Human-Computer Interaction Institute, Carnegie Mellon University, September 15, 2023.
30. "Enhancing Human+AI Teaming for Better Engineering and Design," Department of Industrial and Systems Engineering, University of Tennessee Knoxville, September 9, 2023.
31. "Integrating AI with Human Design Teams," Workshop in Human Factors Challenges Towards the Industrialization of Hybrid Systems, Oak Ridge National Laboratory, September 8, 2023.

32. "Human+AI Collaboration for Better Design and Teamwork," Department of Mechanical Engineering, Clemson University, September 1, 2023.
33. "Creating Digital Twins of Subject Matter Experts," Federal Aviation Administration (FAA) William J. Hughes Technical Center, July 6, 2023.
34. "Design for Artificial Intelligence: A Force Multiplier for Additive Manufacturing," CDFAM 23 NYC - Computational Design (+DfAM) Symposium, June 15, 2023.
35. "Human+AI Collaboration for Better Teamwork and Engineering Design," MITRE Modeling and Analysis Innovation Center (MAIC) Complexity Talk Series, February 23, 2023.
36. "Automating Design: Exploration, Exploitation, and the Search for a Free Lunch," PARC Design Meeting Group, February 18, 2023.
37. "Dreaming of Data: Examining Data Augmentation for Machine Learning in Additive Manufacturing," NextManufacturing Workshop Membership Meeting, February 9, 2023.
38. "Design for Artificial Intelligence: Proposing a Conceptual Framework Grounded in Data Wrangling," ASME Journal of Computing and Information Science in Engineering Spotlight Talk, December 16, 2022.
39. "Emerging Opportunities for Human+AI Collaboration in Advanced Manufacturing," NextManufacturing Seminar Series, Carnegie Mellon University, November 15, 2022.
40. "Towards Automation in Additive: Opportunities in Design and Collaboration," Carbon 3D Computation Design and Geometry Groups, November 10, 2022.
41. "Self-Learning Design Agents: Enabling Artificial Search of Complex Action Spaces," Autodesk Research Connections Series, October 18, 2022.
42. "The Design Strategy Network: A Deep Hierarchical Framework to Represent Generative Design," 6th ASME Journal of Mechanical Design Webinar on Artificial Intelligence in Engineering Design, August 1, 2022.
43. Panelist, "Research Team Forum," Construction Industry Institute Annual Conference, August 1, 2022.
44. "Where Do The Cupholders Go?" 2022 Design Computing and Cognition Conference, Workshop on Deep Learning for Design, July 3, 2022.
45. "AI and the Way We Design," AI Brilliance Webinar, August 21, 2021.
46. Panel Moderator, "The Future of Human-AI Collaboration for Engineering Design," Design Automation Conference Signature Event, August 18, 2021.
47. "Data in Additive Manufacturing: Using It, Improving It, Bypassing It," CIMP-3D 7th Additive Manufacturing Colloquium, The Pennsylvania State University, University Park, PA, April 14, 2021.
48. "Towards High-Performance Engineering Teams Through Human-AI Hybridism," Integrated Design Automation Laboratory, Northwestern University, Evanston, IL, April 5, 2021.
49. "Towards High-Performance Engineering Teams Through Human-AI Hybridism," Department of Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA, February 24, 2021.
50. "Combining Computation and Cognition for Better Engineering Design," J. Mike Walker Department of Mechanical Engineering, University of Buffalo, Buffalo, NY, February 20, 2020.
51. "Combining Computation and Cognition for Better Engineering Design," J. Mike Walker Department of Mechanical Engineering, University of Texas at Austin, Austin, TX, October 25, 2019.
52. "Investigating the Effectiveness of Machine Learning Paradigms for Supporting Engineering Designers in Rapidly Evolving Digital Manufacturing," National Science Foundation Engineering Design and Systems Engineering Workshop, West Lafayette, IN, October 8, 2019.
53. "Maximizing Quality in Manufacturing Through Physiocognitive Modeling," Mack Trucks, Macungie, PA, August 27, 2019.
54. "A New Engineering Future Module on Design Thinking," 2019 Engineering Future Facilitator Training, Lansing, MI, July 20, 2019.
55. "Combining Cognition and Computation for Better Engineering Design," School of Mechanical Engineering, Georgia Institute of Technology, Atlanta, GA, April 29, 2019.
56. "Combining Cognition and Computation for Better Engineering Design," Siemens Corporate Technology, Charlotte, NC, April 5, 2019.
57. "Combining Cognition and Computation for Better Engineering Design," Department of Mechanical, Industrial, and Manufacturing Engineering, Oregon State University, Corvallis, OR, March 13, 2019.
58. "Combining Cognition and Computation for Better Engineering Design," IIT (BHU) Leadership for Academicians Program (LEAP), University Park, PA, March 12, 2019.
59. "Computational Approaches to Re-Designing Engineering Teams," Space and Naval Warfare Systems Command (SPAWAR) – Systems Center Pacific, San Diego, CA, January 24, 2019.
60. "Deep Learning in Industry 4.0," Industry 4.0 Workshop, University Park, PA, December 7, 2018.

61. "Hard Problems and How To Solve Them," Research Unplugged Speaker Series, State College, PA, April 19, 2018.
62. "Cognition-Based Computational Tools for Creating the Engineering Teams of the Future," Department of Human Systems Engineering, Arizona State University, Phoenix, AZ, February 22, 2017.
63. "Cognition-Based Computational Tools for Creating the Engineering Teams of the Future," Department of Mechanical Engineering, Massachusetts Institute of Technology, Boston, MA, February 16, 2017.
64. "Cognition-Based Computational Tools for Creating the Engineering Teams of the Future," School of Engineering Design, Technology, and Professional Programs, The Pennsylvania State University, University Park, PA, February 9, 2017.
65. "The Cyborg Designer," Young Member Lightning Talks, International Conference on Engineering Design, Milan, Italy, July 29, 2015.

Government Committees, Civic Appointments, Board Memberships

1. National Science Foundation Review Panel, Computational and Data-Enabled Science and Engineering (CDS&E) Program, 2022.
2. National Science Foundation Review Panel, Advanced Manufacturing (AM) Program, 2022.
3. National Science Foundation Panelist, Future of Work at the Human-Technology Frontier (FW-HTF) Program, 2020.
4. National Science Foundation Panelist, Computational and Data-Enabled Science and Engineering (CDS&E) Program, 2020.
5. National Science Foundation Application Reviewer, Graduate Research Fellowship Program, 2019.

Membership and Activities in Honorary Fraternities, Professional Societies

1. Tau Beta Pi (International Engineering Honors Society), 2008 – Present:
 - a. District Director, District 3 (Pennsylvania and Delaware), May 2013 – May 2023.
 - b. Engineering Futures Facilitator, June 2019 – 2022.
 - c. Chapter Advisor, Penn State University, May 2018 – August 2021.
 - d. Chapter Advisor, Carnegie Mellon University, August 2012 – August 2017.
2. American Society of Mechanical Engineers, 2010 – Present.
3. The Design Society, 2015 – Present.
4. Permafrost Coastal Erosion Research Coordination Network, 2019 – Present.
5. International Network for the Science of Team Science, 2019 – Present (Founding Member).
6. Pi Tau Sigma (Mechanical Engineering Honors Society), 2010 – Present (Founding Member of Beta Gamma Chapter).
7. Chi Epsilon (Civil Engineering Honors Society), 2011 – Present.

Editorial Roles on Publications, Major Activities in Professional Meetings

1. Editorial Board Member, Research in Engineering Design, December 2025 – Present.
2. Associate Editor, Design Science, October 2025 – Present.
3. Editorial Board Member, Sage Journal of Designing, July 2025 – Present.
4. Associate Editor, ASME Journal of Mechanical Design, November 2022 – Present.
5. Guest Editor, Artificial Intelligence for Engineering Design, Analysis and Manufacturing:
 - a. Special Theme on Human-AI Teaming in Engineering Design, April 2026 – Present.
6. Guest Editor, Design Science:
 - a. Thematic Collection on Deep Learning in Design, January 2019 – August 2020.
7. Guest Editor, ASME Journal of Mechanical Design:
 - a. Special Issue on Generate Artificial Intelligence in Design, September 2025 – Present.
 - b. Special Issue on Emerging Technologies and Methods for Early-Stage Product Design and Development, March 2022 – Present.
 - c. Special Issue on Design for Advanced Manufacturing, October 2021 – Present.
 - d. Special Issue on Artificial Intelligence in Engineering Design, October 2020 – January 2022.
8. Guest Editor, ASME Journal of Computing and Information Science in Engineering:
 - a. Special Issue on Generative AI for Design, Manufacturing Processes, and Materials Systems, June 2025 – Present.
 - b. Special Issue on Data Wrangling to Support Research on Engineering Design and Manufacturing, August 2021 – December 2022.
9. ASME IDETC Design Automation Conference Executive Committee:
 - a. Former DAC Chair, August 2024 – August 2025.

- b. DAC Chair, August 2023 – August 2024.
- c. Conference Chair, August 2022 – August 2023.
- d. Program Chair, August 2021 – August 2022.
- e. Special Sessions Chair, August 2020 – August 2021.
- 10. Conference, Special Sessions, and Workshop Coordination:
 - a. Workshop Chair, “Trends in Human-AI Teaming for Engineering Design,” ASME IDETC 2025.
 - b. Program Committee, “Design Automation for CPS and IoT (DESTION 2025),” Virtual Event at IEEE/ACM CPS-IoT WEEK 2025.
 - c. Workshop Chair, “Trends in Human-AI Teaming for Engineering Design,” ASME IDETC 2024.
 - d. Workshop Committee, “Transparency and Collaboration: A Workshop on Open Access Design Team Data,” 2024 Design Computing and Cognition Conference.
 - e. Planning and Teaching Team, “Design Science in the Age of AI and the Digital Transformation,” National Academy of Engineering and Afretec Network.
 - f. Program Committee, “Design Automation for CPS and IoT (DESTION 2024),” Virtual Event at IEEE/ACM CPS-IoT WEEK 2024.
 - g. Bridge Committee, “Artificial Intelligence for Design Problems,” AAAI 2024.
 - h. Technical Program Committee, “Int’l Workshop on Cyber-Physical-Social Infrastructure Systems (CPSIS),” 10th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys 2023).
 - i. Workshop Chair, “Trends in Human-AI Teaming for Engineering Design,” ASME IDETC 2023.
 - j. Program Committee, “Design Automation for CPS and IoT (DESTION 2023),” Virtual Event at IEEE/ACM CPS-IoT WEEK 2023.
 - k. Scientific Committee Member, International Conference on Engineering Design, 2023.
 - l. Workshop Chair, “Trends in Human-AI Teaming for Engineering Design,” ASME IDETC 2022.
 - m. Workshop Committee Member, “Bridging the Gap between Sustainable Design Intention and Practice,” ASME IDETC 2022.
 - n. Co-Organizer, ASME Student Hackathon, ASME IDETC 2022.
 - o. Program Committee, “Design Automation for CPS and IoT (DESTION 2022),” Virtual Event at IEEE/ACM CPS-IoT WEEK 2022.
 - p. Session Review Coordinator, “Design Theory: Understanding Representation and Behavior,” Design Theory and Methodology Conference, 2022.
 - q. Conference Program Committee, Design Computing and Cognition Conference, 2022.
 - r. Challenge Problem Lead, ASME Student Hackathon, ASME IDETC 2021.
 - s. Conference Program Committee, International Conference on Research Into Design, 2021.
 - t. Workshop Co-Chair, “Accelerating Design with Human-Machine Teaming,” Design Computing and Cognition Conference, 2020.
 - u. Conference Program Committee, Design Computing and Cognition Conference, 2020.
 - v. Workshop Organizing Committee, “Knowledge-Based Systems in Computational Design,” International Conference on Case-Based Reasoning, 2020.
 - w. Challenge Problem Lead, ASME Student Hackathon, ASME IDETC 2020.
 - x. Discussion Facilitator, “The 21st Century Classroom,” Workshop on Artificial Intelligence and the Future of STEM and Societies, 2019.
 - y. Discussion Facilitator, “Artificial Intelligence and Machine Learning,” NSF EDSE Workshop, 2019.
 - z. Session Moderator, “M3C: Mentoring into a profession,” ASEE First-Year Engineering Education Conference, 2019.
 - aa. Session Review Coordinator, “Creativity and Ideation,” Design Theory and Methodology Conference, 2019.
 - ab. Workshop Organizing Committee, “Knowledge-Based Systems in Computational Design and Media,” International Conference on Case-Based Reasoning, 2019.
 - ac. Session Review Coordinator, “Prototyping and Design Representation,” Design Theory and Methodology Conference, 2018.
 - ad. Conference Program Committee, Design Computing and Cognition Conference, 2018.
 - ae. Session Moderator, “WIP: Enrollment, Instruction, and Pedagogy – Focus on Classroom Practices,” ASEE First-Year Engineering Education Conference, 2018.
 - af. Workshop Organizing Committee, “Knowledge-Based Systems in Computational Design and Media,” International Conference on Case-Based Reasoning, 2018.

- ag. Workshop Organizing Committee, “Agent-Based Modeling in Design,” Design Computing and Cognition Conference, 2018.
- ah. Session Review Coordinator, “Human Behavior in Design,” Design Theory and Methodology Conference, 2018.
- 11. Reviewer for numerous journals including: ASME Journal of Mechanical Design; ASME Journal of Computing and Information Science in Engineering; Research in Engineering Design; Journal of Open Source Software; Artificial Intelligence for Engineering Design, Analysis and Manufacturing; Design Studies; Design Science; IEEE Transactions on Engineering Management; She Ji: The Journal of Design, Economics and Innovation; Additive Manufacturing Journal; Advances in Engineering Education, Computer-Aided Design; Engineering with Computers; Mathematical and Computer Modelling of Dynamical Systems; European Journal of Engineering Education; SAGE Open; Designing; Engineering Reports; Journal of Engineering Design; Journal of Women and Minorities in Science and Engineering; Structural and Multidisciplinary Optimization.
- 12. Reviewer for numerous conferences including: ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (Design Automated Conference, Design Theory and Methodology Conference, Computers and Information in Engineering Conference, Design Education Conference); International Design Computing and Cognition Conference; IEEE Frontiers in Education Conference; ASEE Annual Conference and Exhibition; ASEE First-Year Engineering Education Conference; ACM CHI Conference on Human Factors in Computing Systems; ACM Richard Tapia Celebration of Diversity in Computing Conference; ACM International Conference on Computational Creativity; Continuums of Service Conference; Conference and Workshops on Neural Information Processing Systems; International Conference on Research Into Design (ICoRD); Workshop on Design Automation for CPS and IoT (DESTION); ACM BuildSys International Workshop on Cyber-Physical-Social Infrastructure Systems (CPSIS).

Service on CMU Committees

- 1. Committee Member, Mechanical Engineering Undergraduate Education Committee, 2024 – Present.
- 2. Committee Member, Mechanical Engineering Graduate Education Committee, 2023 – 2025.
- 3. Committee Chair, Mechanical Engineering Diversity, Equity, and Inclusion Committee, 2022 – 2023.
- 4. Committee Member, College of Engineering Diversity, Equity, and Inclusion Committee, 2022 – 2023.
- 5. Committee Member, Search Committee for Teaching Track Faculty in Integrated Innovation Institute, 2022 – 2022.
- 6. Sub-Committee Co-Chair, Representation Sub-Committee, Mechanical Engineering Diversity, Equity, and Inclusion Committee, 2021 – 2022.
- 7. Committee Member, Mechanical Engineering Diversity, Equity, and Inclusion Committee, 2021 – 2023.

Service on PhD Thesis Committees

- 1. Aditya Joglekar, CMU Mechanical Engineering, July 2026.
- 2. Joe Joseph, CMU Mechanical Engineering, June 2026 (Proposal).
- 3. Frederic Gmeiner, CMU Human-Computer Interaction Institute, June 2026.
- 4. Ming-Hua Chang, The Pennsylvania State University Mechanical Engineering, April 2026 (Comprehensive Examination).
- 5. Ozan Mulayim, CMU Civil Engineering, January 2026.
- 6. Yayati Jadhav, CMU Mechanical Engineering, January 2026.
- 7. Miaosi Dong, CMU Civil Engineering, September 2025 (Proposal).
- 8. Cynthia Letting, The Pennsylvania State University, June 2025.
- 9. Chunshan Hu, CMU Mechanical Engineering, September 2024.
- 10. Kazem Meidani, CMU Mechanical Engineering, August 2024.
- 11. Pengkun Liu, CMU Civil Engineering, August 2024.
- 12. Jorge Vasquez, CMU Mechanical Engineering, July 2024.
- 13. Ozguc Capunaman, The Pennsylvania State University, June 2024.
- 14. Uchechukwu Agwu, CMU Mechanical Engineering, April 2024.
- 15. Muhammad Mueed Khan, CMU Mechanical Engineering, January 2024 (Proposal).
- 16. Nathan Brown, Clemson University, August 2023.
- 17. Zhonglin Cao, CMU Mechanical Engineering, April 2023.
- 18. Ethan Brownell, CMU Mechanical Engineering, April 2023.
- 19. Wentai Zhang, CMU Mechanical Engineering, December 2022.
- 20. Haiguang Liao, CMU Mechanical Engineering, December 2022.
- 21. Sandeep Krishnakumar, The Pennsylvania State University, December 2022.

22. Ali Karji, The Pennsylvania State University, June 2022.
23. Min Liew, The Pennsylvania State University, June 2022.
24. Jennifer Bracken Brennan, The Pennsylvania State University, February 2022.
25. Athar Sefid, The Pennsylvania State University, October 2021.
26. Sagata Bhawani, The Pennsylvania State University, September 2021.
27. Pratima Saravanan, The Pennsylvania State University, August 2021.
28. Ellen Zerbe, The Pennsylvania State University, June 2021.
29. Tobias Mahan, The Pennsylvania State University, June 2021.
30. Merel Van Diepen, ETH Zurich, June 2020.
31. Chuan Cao, Universidad de Navarra, May 2020.
32. Zachary Ball, University of Buffalo, February 2020.
33. Hong-En Chen, The Pennsylvania State University, September 2019.

Media Interviews, Articles, and YouTube Videos

1. August 27, 2026, Carnegie Mellon University, "Navigating the AI Era with a CMU Focus on Critical Thinking," <https://www.cmu.edu/news/stories/archives/2026/august/navigating-the-ai-era-with-a-cmu-focus-on-critical-thinking>
2. July 13, 2026, Pittsburgh Post-Gazette, "Pittsburgh researchers slam proposed changes to federal grant reviews," <https://www.post-gazette.com/business/healthcare-business/2026/07/13/pittsburgh-carnegie-mellon-researchers-federal-grant/s/stories/202607130018>
3. April 17, 2026, Trib Live, "Pittsburgh-area students design human-centered AI models to tackle education issues," <https://triblive.com/news/education-classroom/pittsburgh-area-students-design-human-centered-ai-models-to-tackle-education-issues/>
4. April 10, 2026, Carnegie Mellon University College of Engineering, "See one, do one, teach AI one," <https://engineering.cmu.edu/news-events/news/2026/04/10-teach-ai.html>
5. January 29, 2026, NSF AI Institute for Societal Decision Making YouTube Channel, "AI and the Battle for the Soul of Design," <https://www.youtube.com/watch?v=nQJEhskJoK8>
6. January 8, 2026, CMU-Africa, "Understanding human behavior in manufacturing," <https://www.africa.engineering.cmu.edu/news/2026/01/08-understanding-human-behavior.html>
7. December 9, 2025, Institution of Mechanical Engineers, "Prioritise these skills to stay ahead, AI experts tell new engineers," <https://www.imeche.org/news/news-article/prioritise-these-skills-to-stay-ahead-ai-experts-tell-new-engineers>
8. November 5, 2025, CDFAM YouTube Channel, "AI and the Battle for the Soul of Design - Chris McComb - Carnegie Mellon University CDFAM NYC 2025," <https://www.youtube.com/watch?v=hyu1AuSeIDA>
9. October 31, 2025, Carnegie Mellon University College of Engineering, "AI Coach is changing the way teams perform for better results," <https://engineering.cmu.edu/news-events/news/2025/10/31-ai-coach.html>
10. October 20, 2025, College of Engineering YouTube Channel, "Faculty Insights with Chris McComb," https://www.youtube.com/watch?v=B9djVQpl_b8
11. October 1, 2025, Carnegie Mellon University Mechanical Engineering, "A hands-on, design-driven approach to mechanics education," <https://www.meche.engineering.cmu.edu/news/2025/10/01-sophomore-mechanics.html>
12. September 12, 2025, CDFAM, "AI and the Battle for the Soul of Design – Chris McComb," <https://cdfam.com/ai-and-the-battle-for-the-soul-of-design-chris-mccomb/>
13. June 3, 2025, Carnegie Mellon University Mechanical Engineering, "NASA internship fuses academic research and industry application," <https://www.meche.engineering.cmu.edu/news/2025/06/03-nasa-intern.html>
14. May 13, 2025, NYU Digital Manufacturing Security YouTube Channel, "Conversation with Prof. Christopher McComb of Carnegie Mellon University," <https://www.youtube.com/watch?v=OBwjODninkk>
15. May 6, 2025, Carnegie Mellon University College of Engineering, "How 3D printing can improve African manufacturing," <https://engineering.cmu.edu/news-events/news/2025/05/06-african-manufacturing.html>
16. January 28, 2025, TechXplore, "Neural network cuts cost of engineering simulations," <https://techxplore.com/news/2025-01-neural-network-simulations.html>
17. December 17, 2024, TechXplore, "Hybrid machine learning model predicts financial market volatility with increased accuracy," <https://techxplore.com/news/2024-12-hybrid-machine-financial-volatility-accuracy.html>
18. December 6, 2024, İTÜ Makina Fakültesi YouTube Channel, "Exploring Modes of Human+AI Teaming for Better Engineering and Design," <https://www.youtube.com/watch?v=pFrUm9svZW0>
19. October 31, 2024, Engineering Designer, "Making AI a better design teammate," <https://engineering-designer.com/making-ai-a-better-design-teammate/>

20. October 30, 2024, TechXplore, “Putting the ghost in the machine—team uses zero shot prompting method to get design solutions,” <https://techxplore.com/news/2024-10-ghost-machine-team-shot-prompting.html>
21. October 30, 2024, TechXplore, “AI generates missing parts of temperature distribution,” <https://techxplore.com/news/2024-10-ai-generates-temperature.html>
22. September 18, 2024, Carnegie Mellon University Mechanical Engineering, “Boeing Visiting Professorship Program facilitates new research and education opportunities,” <https://www.mech.eengineering.cmu.edu/news/2024/09/25-boeing-visiting-professor.html>
23. August 8, 2024, CIIBuilds YouTube Channel, “Chris McComb: Engineering with Artificial Intelligence - AI as a Tool, Teammate, and Coach,” https://www.youtube.com/watch?v=mZWb_q6QUB0
24. August 8, 2024, Construction Industry Institute, “CII’s 2024 Annual Conference was Another Huge Success!” <https://www.construction-institute.org/blog/cii-ac24-blog>
25. August 7, 2024, College of Engineering, Carnegie Mellon University YouTube Channel, “Jon Cagan and Chris McComb: AI Coach,” <https://www.youtube.com/watch?v=JNLyrUEdlCs>
26. July 14, 2024, Autodesk Research, “Evaluating Large Language Models for Material Selection,” <https://www.research.autodesk.com/publications/evaluating-llms-material-selection/>
27. February 1, 2024, TechXplore, “Researchers test human vs AI-human hybrid teams in dynamic design challenge,” <https://techxplore.com/news/2024-02-human-ai-hybrid-teams-dynamic.html>
28. January 24, 2024, CDFAM Substack, “On Smoothing the Rough Edges: Evaluating Automatically Generated Multi-Lattice Transitions with Machine Learning,” <https://www.designforam.com/p/on-smoothing-the-rough-edges-evaluating>
29. January 17, 2024, Computerworld, “AI pros are increasingly uneasy about the technology — survey,” <https://www.computerworld.com/article/1611595/ai-pros-are-increasingly-uneasy-about-the-technology-survey.html>
30. December 1, 2023, Today’s Veterinary Business, “Unleashed Potential: How artificial intelligence is changing veterinary medicine,” <https://todaysveterinarybusiness.com/veterinary-ai-1223/>
31. September 15, 2023, Carnegie Mellon University Human-Computer Interaction Institute Seminar Series, “A Tool, A Teammate, A Coach: Human+AI Collaboration in Design,” <https://scs.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=32b117e8-cd5f-41c0-af10-b07601329160>
32. September 12, 2023, Carnegie Mellon University College of Engineering, “Mindfulness may help engineering students’ experiences with stress,” <https://engineering.cmu.edu/news-events/news/2023/09/12-engineering-student-stress.html>
33. August 24, 2023, AMT—The Association for Manufacturing Technology, “CDFAM 2023: Highlights from the Inaugural Conference Dedicated to Computational Design,” <https://amtonline.org/article/cdfam-2023-highlights-from-the-inaugural-conference-dedicated-to>
34. July 21, 2023, Good Morning America, “What is artificial intelligence? Experts weigh in,” <https://www.goodmorningamerica.com/news/story/what-is-artificial-intelligence-ai-99919927>
35. July 21, 2023, ABC News, “What is artificial intelligence? Experts weigh in,” <https://abcnews.go.com/Technology/what-is-artificial-intelligence-ai/story?id=99919927>
36. July 11, 2023, CDFAM YouTube Channel, “Design for Artificial Intelligence: Chris McComb – Carnegie Mellon - CDFAM 23,” https://www.youtube.com/watch?v=72yVB9_PNJE
37. May 17, 2023, Wevolver, “Entering the Age of AI in Engineering,” <https://www.wevolver.com/article/entering-the-age-of-ai-in-engineering>
38. May 12, 2023, CDFAM Substack, “Design for Artificial Intelligence: A Force Multiplier for Additive Manufacturing,” <https://www.designforam.com/p/dfai-design-for-artificial-intelligence>
39. January 3, 2023, TechXplore, “DfAI: The missing piece of artificial intelligence engineering,” <https://techxplore.com/news/2023-01-dfai-piece-artificial-intelligence.html>
40. December 16, 2022, J. Computing & Information Science in Engineering YouTube Channel, “JCISE Dec 2022 Spotlight: Design for Artificial Intelligence...Grounded in Data Wrangling,” <https://www.youtube.com/watch?v=acL4A0WLyTY>
41. November 29, 2022, Smittcamp Family Honors College YouTube Channel, “Fireside Chat #6 | With Chris McComb,” <https://www.youtube.com/watch?v=vmd973LUU-s>
42. October 11, 2022, Smittcamp Family Honors College, “Featured Sustaining Donor: Chris McComb,” <https://fresnostatesfh.c.squarespace.com/smittcamp-gives-back-blog/featured-donor-chris-mccomb>
43. August 5, 2022, College of Engineering, Carnegie Mellon University YouTube Channel, “Chris McComb: Wrangling Manufacturing Data by Using Machine Learning,” <https://www.youtube.com/watch?v=ySL032JYg0M>
44. August 3, 2022, Journal of Mechanical Design Webinar YouTube Channel, “6th JMD Webinar: Artificial Intelligence in Engineering Design – August 1, 2022,” <https://www.youtube.com/watch?v=6KqnCk7eFtg>
45. June 24, 2022, College of Engineering, Carnegie Mellon University YouTube Channel, “Jon Cagan and Chris McComb: Human-AI Teaming,” <https://www.youtube.com/watch?v=uavU0QdgyYc>
46. March 31, 2022, Machine Design, “How Online Learning Affects Engineering Student Identities,” <https://www.machinedesign.com>

- esign.com/community/article/21237833/how-online-learning-affects-engineering-student-identities
47. March 4, 2022, College of Engineering, Carnegie Mellon University YouTube Channel, "What Inspired You to Become an Engineer: Chris McComb," <https://www.youtube.com/watch?v=EXU7MeINCOI>
 48. March 2, 2022, TechXplore, "Generative multidisciplinary: A common framework can transform how researchers collaborate," <https://techxplore.com/news/2022-03-multidisciplinary-common-framework-collaborate.html>
 49. February 16, 2022, College of Engineering, Carnegie Mellon University YouTube Channel, "Chris McComb: Building Simulations to Predict Human Behavior," https://www.youtube.com/watch?v=_06hKb9A0HA
 50. December 9, 2021, TechXplore, "Automating engineering's ideal manager," <https://techxplore.com/news/2021-12-automating-ideal.html>
 51. November 30, 2021, The Next Byte Podcast, "Meet The AI Replacing Your Manager," <https://the-next-byte-wevolver.simplecast.com/episodes/46-meet-the-ai-replacing-your-manager>
 52. August 3, 2021, Carnegie Mellon University Mechanical Engineering, "Designing for a brighter future," <https://www.mech.eengineering.cmu.edu/news/2021/08/designing-for-a-brighter-future.html>
 53. June 21, 2021, Construction Industry Institute Blog, "New Project: Defining Opportunities to Leverage Artificial Intelligence, Machine Learning, and Data Analytics Applications for AWP," [https://www.construction-institute.org/blog/2021/june-2021/new-project-defining-opportunities-to-leverage-\(1\)](https://www.construction-institute.org/blog/2021/june-2021/new-project-defining-opportunities-to-leverage-(1))
 54. January 25, 2021, Penn State News, "Engineering design faculty member awarded early career professorship," <https://www.psu.edu/news/academics/story/engineering-design-faculty-member-awarded-early-career-professorship>
 55. January 21, 2021, TechXplore, "Merging technologies with color to avoid design failures," <https://techxplore.com/news/2021-01-merging-technologies-failures.html>
 56. November 16, 2020, Penn State News, "Enhanced human-AI collaboration possible through new grant," <https://www.psu.edu/news/research/story/enhanced-human-ai-collaboration-possible-through-new-grant>
 57. December 5, 2019, Engineering.com, "AI with Creative Capabilities is on the Horizon," <https://www.engineering.com/story/ai-with-creative-capabilities-is-on-the-horizon>
 58. November 12, 2019, Cosmos Magazine, "AI learns to design: The challenge is to solve engineering problems the same way as humans," <https://cosmosmagazine.com/technology/ai/ai-learns-to-design/>
 59. November 6, 2019, TechXplore, "AI agents imitate engineers to construct effective new designs using visual cues like humans do," <https://techxplore.com/news/2019-11-ai-agents-imitate-effective-visual.html>
 60. November 6, 2019, ScienceDaily, "AI learns to design: AI agents imitate engineers to construct effective new designs using visual cues like humans do," <https://www.sciencedaily.com/releases/2019/11/191106144932.htm>
 61. September 4, 2019, Newswise, "Using prototypes to improve undergraduate engineering communication skills," <https://www.newswise.com/articles/using-prototypes-to-improve-undergraduate-engineering-communication-skills>
 62. August 23, 2018, Eva Lantsoght, "I am Chris McComb, and This is How I Work," <https://www.evalantsoght.com/2018/08/i-am-chris-mccomb-and-this-is-how-i-work.html>
 63. April 3, 2018, Hong-En Chen YouTube Channel, "Trust and Conflict in Design Teams," <https://www.youtube.com/watch?v=Mm1YMv79ehQ>
 64. March 22, 2018, Penn State Engineering, "Quiz [re]design: Rethinking engineering design evaluation," <https://www.sedi.psu.edu/news-archive/Sp18/rethinking-engineering-design-evaluation.aspx>