Leah M. Chong

Assistant Professor | The University of Texas at Austin

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Education

Ph.D. in Mechanical Engineering *August 2017 – May 2022*
Carnegie Mellon University, Pittsburgh, PA
Dissertation: Role of Human Self-Confidence and Their Confidence in Artificial Intelligence in AI-Assisted Decision-Making in Engineering Design
Committee: Jonathan Cagan (Advisor), Kenneth Kotovsky (Advisor), Kosa Goucher-Lambert, Levent Burak Kara

M.S. in Mechanical Engineering *August 2017 – May 2020*
Carnegie Mellon University, Pittsburgh, PA

B.S. in Mechanical Engineering *August 2013 – May 2017*
Rice University, Houston, TX

Appointments

Assistant Professor *January 2025 – Present*
Walker Department of Mechanical Engineering, The University of Texas at Austin, Austin, TX

Research Interests

Human-AI design collaboration; human-centered interaction design; computational design methods; design cognition and decision-making; design theory and methodology

Research Experience

Toyota Research Institute Human-Centered AI division *April 2024 – November 2024*
Intern *Los Altos, CA*

- Working with the Future Product Innovation team on investigating the novelty-surprise relationship in design and the generation of surprising designs using text-to-image models.

Ideation Lab (PI: Maria Yang) *September 2022 – November 2024*
Postdoctoral Associate *Massachusetts Institute of Technology, Cambridge, MA*

- Investigating novel human-centered methods for designers to better identify and empathize with user needs by leveraging various machine learning-based computer vision techniques.
- Studying pressing topics in human-AI collaboration in engineering design specifically regarding designers and consumers' trust and acceptance of AI, as well as AI-generated designs.
- Conducting timely research on the influence of generative design tools on the design process and designer behavior and decisions, especially when designing for qualitative design goals, such as aesthetics.

Design Computation and Digital Engineering (DeCoDE) Lab (PI: Faez Ahmed) *September 2022 – November 2024*
Research Collaborator *Massachusetts Institute of Technology, Cambridge, MA*

- Investigating new methods to enhance the usability of text-to-image generative models in engineering design contexts, such as improving the feasibility of generated images by text-to-image models.
- Studying design exploration strategies in using text-to-image generative AI that successfully yield designs that meet specific goals like feasibility, novelty, and aesthetics.

Integrated Design Innovation Group (IDIG) (PI: Jonathan Cagan) *August 2017 – July 2022*
Postdoctoral Researcher, Ph.D. Candidate *Carnegie Mellon University, Pittsburgh, PA*

- Conducted pressing human-centered research on human-AI collaboration in engineering design, particularly on how designers' confidence in AI and self-confidence are influenced by AI performance, AI feedback, and the number of AI teammates, and consequently affect their decisions.
- Explored a novel voting approach to human-AI joint decision-making and its influence on designers' confidence and decision-making.
- Investigated the potential of constraints to enhance designer creativity by studying the relationship between item constraints and designers' ideation effectiveness.

Robotics and Intelligent Systems (RiSYS) Lab (PI: Fathi Ghorbel) *February 2015 – December 2016*
Undergraduate Research Assistant *Rice University, Houston, TX*

- Modeled and designed physics-based micro-robotic systems such as a submersible in-line pump for an underwater inspection robot and a micro-robot locator.
- Conducted literature review and initial video analyses of the gait of foot drop patients for a project that developed robots that assist human gait training.

Publications

Journal Articles

Zhu, Q., **Chong, L.**, Yang, M., and Luo, J., 2025, "Reading Users' Minds with Large Language Models: Mental Inference for Artificial Empathy in Design," *ASME Journal of Mechanical Design*, 147(6), pp. 061401. https://doi.org/10.1115/1.4067527.

Chong, L., Lo, I., Rayan, J., Dow, S., Ahmed, F., and Lykourentzou, I., 2025, "Prompting for Products: Investigating Design Space Exploration Strategies for Text-to-Image Generative Models," *Design Science*, 11, e2. https://doi.org/10.1017/dsj.2024.51.

Saadi, J., Yang, M., and **Chong, L.**, 2024, "The Effect of Targeting Both Quantitative and Qualitative Objectives in Generative Design Tools on the Design Outcomes," *Research in Engineering Design*, 35, pp. 409-425. https://doi.org/10.1007/s00163-024-00440-y.

Chong, L., Kotovsky, K., and Cagan, J., 2024, "Human Designers' Dynamic Confidence and Decision-Making When Working with More than One Artificial Intelligence," *ASME Journal of Mechanical Design*, 146(8), pp. 081402. https://doi.org/10.1115/1.4064565.

Hu, M., Zhang, G., **Chong, L.**, Cagan, J., 2024, and Goucher-Lambert, K., 2024, "How Being Outvoted by AI Teammates Impacts Human-AI Collaboration," *International Journal of Human-Computer Interaction*, pp. 1–18. https://doi.org/10.1080/10447318.2024.2345980.

Chong, L., Raina, A., Goucher-Lambert, K., Kotovsky, K., and Cagan, J., 2023, "The Evolution and Impact of Human Confidence in Artificial Intelligence and in Themselves on AI-Assisted Decision-Making in Design," *ASME Journal of Mechanical Design*, 145(3), pp. 031401. https://doi.org/10.1115/1.4055123.

Zhang, G., **Chong, L.**, Kotovsky, K., and Cagan, J., 2023, "Trust in an AI Versus a Human Teammate: The Effects of Teammate Identity and Performance on Human-AI Cooperation," *Computers in Human Behavior*, 139, pp. 107536. https://doi.org/10.1016/j.chb.2022.107536.

Chong, L., Zhang, G., Goucher-Lambert, K., Kotovsky, K., and Cagan, J., 2023, "Data on Human Decision, Feedback, and Confidence During an Artificial Intelligence-Assisted Decision-Making Task," *Data in Brief*, 46, pp. 108884. https://doi.org/10.1016/j.dib.2023.108884.

Chong, L., Zhang, G., Goucher-Lambert, K., Kotovsky, K., and Cagan, J., 2022, "Human Confidence in Artificial Intelligence and in Themselves: The Evolution and Impact of Confidence on Adoption of AI Advice," *Computers in Human Behavior*, 127, pp. 107018. https://doi.org/10.1016/j.chb.2021.107018.

Peer-Reviewed Conference Papers

Chong, L., Zhu, Q., Schelhaas, B., Ng, G., and Yang, M., 2025 "Facilitating Identification of Ergonomic User Needs through AI-Assisted Observation," ASME International Design Engineering Technical Conferences - Design Automation Conference, Anaheim, CA, August 17-20, 2025.

Chong, L., Rayan, J., Lykourentzou, I., Dow, S., and Ahmed, F., 2024 "CAD-Prompted Generative Models: A Pathway to Feasible and Novel Engineering Designs," ASME International Design Engineering Technical Conferences – Design Automation Conference, Washington, DC, August 25-28, 2024.

Zhu, Q., **Chong, L.**, Yang, M., and Luo, J., 2024, "Reading Users' Minds from What They Say: An Investigation into LLM-based Empathic Mental Inference," ASME International Design Engineering Technical Conferences – Design Theory and Methodology Conference, Washington, DC, August 25-28, 2024. **Best Paper Award**

Saadi, J., Yang, M., and **Chong, L.**, "Form Attributes to Measure and Understand Aesthetic Preferences," ASME International Design Engineering Technical Conferences – Design Theory and Methodology Conference, Boston, MA, August 20-23, 2023, 6, V006T06A018. https://doi.org/10.1115/DETC2023-116601.

Chong, L. and Yang, M., 2023, "AI vs. Human: The Public's Perceptions of the Design Abilities of Artificial Intelligence," Proceedings of the Design Society: International Conference on Engineering Design, Bordeaux, France, July 24-28, 2023, 3, pp. 495-504. https://doi.org/10.1017/pds.2023.50.

Chong, L., Raina, A., Goucher-Lambert, K., Kotovsky, K., and Cagan, J., 2022, "Collaborative Design Decision-Making with Artificial Intelligence: Exploring the Evolution and Impact of Human Confidence in AI and in Themselves," ASME International Design Engineering Technical Conferences - Design Theory and Methodology Conference, St. Louis, MO, August 14-17, 2022, 6, V006T06A021. https://doi.org/10.1115/DETC2022-88574. **Best Paper Award Finalist**

Chong, L., Kotovsky, K., and Cagan, J., 2022, "Are Confidence Designers Good Teammates to Artificial Intelligence?: A Study of Self-Confidence, Competence, and Collaborative Performance," Proceedings of the Design Society: DESIGN Conference, Virtual, May 23-26, 2022, pp. 1531-1540. https://doi.org/10.1017/pds.2022.155.

Chong, L., Goucher-Lambert, K., Kotovsky, K., and Cagan, J., 2022, "Empirically Understanding the Impact of Item Constraints on Designer Ideation," 2020 Design Computing and Cognition Conference, Virtual, December 14-16, 2020, pp. 3-19. https://doi.org/10.1007/978-3-030-90625-2_1.

Jin, Y. G., **Chong, L.**, and Cho, H. K., 2012, "Designing a Robotics-Enhanced Learning Content for STEM Education," 2012 9th International Conference on Ubiquitous Robots and Ambient Intelligence, Daejeon, Korea, November 26-28, 2012, pp. 433-436. https://doi.org/10.1109/URAI.2012.6463032.

Funding

MIT-Google Grant
Title: Learning latent human needs for real-world generative design of physical systems
PIs: Maria Yang, Caitlin Mueller, Funding amount: $115,000, Funding period: June 1, 2023 to May 31, 2024

- Contributed substantially to the writing of the proposal.
- Working with industry partners to conduct research with both theoretical and practical impact.

Awards & Honors

Carnegie Mellon University Mechanical Engineering Milton Shaw Ph.D. Research Award *March 2022*
(Selected by the faculty and postdoc judges at a Ph.D. Research Symposium poster session)

Carnegie Mellon University Presidential Fellowship *September 2017*

Rice President's Honor Roll *May 2016*

VEX Robotics Competition Judges' Choice Award *November 2015*

Teaching Experience

Mechanical Engineering Design Methodology (ME 366J) — *Spring 2025 - Present*
Instructor — *The University of Texas at Austin, Austin, TX*

Introduction to Design (2.00) — *Fall 2022, Fall 2023*
Co-Instructor, Team Lab Instructor — *Massachusetts Institute of Technology, Cambridge, MA*

Numerical Methods in Engineering (24-703) — *Fall 2019*
Teaching Assistant — *Carnegie Mellon University, Pittsburgh, PA*

Engineering Design II – Conceptualization and Realization (24-441) — *Spring 2018*
Teaching Assistant, Chief Technical Officer — *Carnegie Mellon University, Pittsburgh, PA*

Mentoring Experience

Dante Solano, Ph.D. student at UT Austin — *August 2025 – Present*
Ruiming Kang, Undergraduate student at UT Austin — *March 2025 – Present*
Manxin Chen, Ph.D. student at UT Austin — *January 2025 – Present*
Qihao Zhu, Visiting student at MIT — *November 2023 – November 2024*
Booker Schelhaas, Master's student at MIT — *June 2023 – November 2024*
I-Ping Lo, Master's student at Utrecht University — *June 2023 – September 2023*
Jana Saadi, Ph.D. student at MIT — *September 2022 – September 2023*
Krystal Montgomery, Undergraduate student at MIT — *Spring 2023*

Invited Talks

Generative, Generative Design, Generative Design Thinking, ASME International Design Engineering Technical Conferences (IDETC) Design Automation Conference (DAC) Signature Event, Anaheim, CA, August 19, 2025.

Early Career Research - Lightning Talks, ASME International Design Engineering Technical Conferences (IDETC) Design Automation Conference (DAC), Anaheim, CA, August 18, 2025.

Emerging Technologies and Methods for Early Stage Product Design and Development, ASME International Design Engineering Technical Conferences (IDETC) Workshop, Boston, MA, August 20, 2023.

Women's Technology Program (WTP) in Mechanical Engineering Showcase, Massachusetts Institute of Technology, Cambridge, MA, August 1, 2023.

Professional & Service Activities

Professional Associations

Design Society — *April 2023 – Present*
American Society of Mechanical Engineers — *June 2018 – Present*
Society of Women Engineers — *August 2013 – Present*
National Postdoctoral Association — *September 2022 – November 2024*

Reviewer Activities

Journals: ASME Journal of Mechanical Design, International Journal of Human-Computer Interactions, Computers in Human Behavior

Conferences: ASME IDETC Design Theory and Methodology Conference, International Conference on Engineering Design, DESIGN Conference

Professional Service Activities

The 4rd Workshop on Human-AI Teaming, ASME IDETC Conference — *August 17, 2025*
Organizer — *Anaheim, CA*

The 3rd Workshop on Human-AI Teaming, ASME IDETC Conference — *August 25, 2024*
Organizer — *Washington, DC*

PhD Forum, International Conference on Engineering Design (ICED) — *July 24, 2023*
Junior Expert — *Bordeaux, France*

University Service and Involvement Activities

Mechanical Engineering Graduate Student Organization — *August 2018 – May 2022*
Secretary, Member — *Carnegie Mellon University, Pittsburgh, PA*

Korean Graduate Student Association — *August 2017 – May 2022*
Member — *Carnegie Mellon University, Pittsburgh, PA*

Korean International Student Association — *August 2013 – May 2017*
Member — *Rice University, Houston, TX*

Design for America — *August 2014 – May 2017*
Project Lead, Member — *Rice University, Houston, TX*

Robotics Club — *August 2015– December 2015*
Head of Internal Relations, Member — *Rice University, Houston, TX*

Outreach Activities

Women's Technology Program (WTP) in Mechanical Engineering — *Summer 2023*
Project Mentor — *Massachusetts Institute of Technology, Cambridge, MA*

Camp Oakhurst Service Trip: Fostering Community and Erasing Stereotypes Surrounding Disabilities — *March 2015*
Oakhurst, NJ

Certificates & Training

NSF Workshop for Extreme Design — *August 2023*
Boston, MA

Kaufman Teaching Certificate — *Spring 2023*
Massachusetts Institute of Technology, Cambridge, MA

2021 Teaching and Learning Summit — *October 2021*
Carnegie Mellon University, Pittsburgh, PA

Eberly Center Teaching Seminars — *January 2018 – October 2021*
Carnegie Mellon University, Pittsburgh, PA

Key Attended Seminars: Supporting Ourselves and Our Students: Navigating Mental Health in the Classroom, Teaching Inclusively: Leveraging Diversity and Promoting Equity in Your Classroom, Guiding Attention and Memory to Build Knowledge, Grading and Delivering Feedback on Quantitative/Writing Assignments

Skills

Programming Languages: Python, C/C++

Software: MATLAB, SolidWorks, Microsoft Office, Adobe Suite, ACT-R

Languages: English (Native), Korean (Native)