

Elisa Kwon

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Research Experience

University of Toronto

Postdoctoral research fellow

- Studying human interaction with generative-AI systems in CAD design
- Advisor: Dr. Alison Olechowski

January 2025 –
Toronto, ON, CA

University of California, Berkeley

Graduate student researcher

- Investigating human-AI collaboration through behavioral, cognitive, and neuroimaging human studies
- Thesis: *Human-AI Interaction and Alignment in Engineering Design*
- Advisor: Dr. Kosa Goucher-Lambert (ME)
- Committee: Dr. Bjoern Hartmann (EECS), Dr. Hannah Stuart (ME)

Aug 2020 – Present
Berkeley, CA, USA

University of Toronto

Research assistant

- Designing and executing studies testing creative task performance
- Developing methods to support concept generation
- Thesis: *Methods towards enhancing divergent thinking in conceptual design*
- Advisor: Dr. L.H. Shu

Sept 2017 – Aug 2019
Toronto, ON, CA

Education

University of California, Berkeley

Ph.D. in Mechanical Engineering

Aug 2020 – Dec 2024 (Expected)
Berkeley, CA, USA

University of Toronto

M.A.Sc. in Mechanical Engineering

Sept 2017 – Aug 2019
Toronto, ON, CA

University of Toronto

B.A.Sc. in Engineering Science

Sept 2012 – May 2017
Toronto, ON, CA

Teaching and Mentorship Experience

University of Toronto

Course instructor

- Organization Design (Spring 2025)

September 2024 – May 2025
Toronto, ON, CA

Undergraduate thesis advisor

- Fourth year undergraduate thesis student (Fall 2024-Spring 2025)
- Project: Investigating Effects of AI-Generated Stimuli on CAD Design

University of California, Berkeley

MEng Capstone project mentor

- Masters of Engineering (ME) Students (Fall 2023-Spring 2024)
- Project: Next Generation Design Systems (Visual Creativity)

Jan 2021 – May 2024
Berkeley, CA, USA

Graduate student instructor

- Design Methodology (Spring 2021)
- Human-Centered Design Methods (Fall 2021, 2022)

University of Toronto

Head teaching assistant

- Design of Innovative Products (Fall 2017, 2018)

Sept 2017 – Dec 2018
Toronto, ON, CA

Journal Articles

Kwon, E., Goucher-Lambert, K. (2024) Comparing and evaluating human and computationally derived representations of non-semantic design information. *Journal of Mechanical Design*. 146(3): 031401. doi:10.1115/1.4063567

Kwon, E., Rao, V., Goucher-Lambert, K. (2023) Understanding inspiration: Insights into how designers search for, discover, and use inspirational stimuli. *Design Studies*, 88, 101202. doi.org/10.1016/j.destud.2023.101202

Kwon, E., Huang, F., Goucher-Lambert, K. (2022) Enabling multi-modal search for inspirational design stimuli using deep learning. *AI EDAM*, 36, E22. doi:10.1017/S0890060422000130

Kwon, E., Ryan, J.D., Bazylak, A., Shu, L.H. (2020) Does visual fixation affect idea fixation? *Journal of Mechanical Design*, 142(3), 031118. doi:10.1115/1.4045600

Kwon, E., Pehlken, A., Thoben, K-D., Bazylak, A., Shu, L.H. (2019) Visual similarity to aid alternative-use concept generation for retired wind-turbine blades. *Journal of Mechanical Design*, 141(3), 031106. doi:10.1115/1.4042336

Peer-reviewed Conference Papers

Kwon, E., Patterson, J.D., Beaty, R., Goucher-Lambert, K. (2024) Assessing the alignment between word representations in the brain and large language models. Design Computing and Cognition'24. Montreal, QC, CA. July 8-10, 2024.

Kwon, E., Goucher-Lambert, K. (2023) Similarities and differences in human vs. computational representations of non-semantic inspirational design stimuli. ASME International Design Engineering Technical Conferences - Design Theory and Methodology Conference. Boston, MA. August 20-23, 2023.

Kwon, E., Goucher-Lambert, K. (2023) Examining the boundary between near and far design stimuli. Proceedings of the Design Society: 24th International Conference on Engineering Design. Bordeaux, France. July 24-28, 2023.

Kwon, E., Rao, V., Goucher-Lambert, K. (2022) Investigating the roles of expertise and modality in designers' search for inspirational stimuli. ASME International Design Engineering Technical Conferences - Design Theory and Methodology Conference. St. Louis, MO. August 14-17, 2022.

Kwon, E., Rao, V., Goucher-Lambert, K. (2022) Exploring designers' encounters with unexpected inspirational stimuli. Design Computing and Cognition'22. Glasgow, Scotland, UK. July 4-6, 2022.

Rao, V., Kwon, E., Goucher-Lambert, K. (2022) Like a Moodboard, but more interactive - The role of expertise in designers' mental models and speculations on an intelligent design assistant. Design Computing and Cognition'22. Glasgow, Scotland, UK. July 4-6, 2022.

Kwon, E., Huang, F., Goucher-Lambert, K. (2021) Multi-modal search for inspirational examples in design. ASME International Design Engineering Technical Conferences - Design Theory and Methodology Conference. Virtual, Online. August 17-19, 2021.

Kwon, E., Ryan, J.D., Bazylak, A., Shu, L.H. (2019) Does visual fixation affect idea fixation? ASME International Design Engineering Technical Conferences - Design Theory and Methodology Conference. Anaheim, CA. August 18-21, 2019.

Kwon, E., Pehlken, A., Thoben, K-D., Bazylak, A., Shu, L.H. (2018) Visual similarity to aid alternative-use concept generation for retired wind-turbine blades. ASME International Design Engineering Technical Conferences - Design Theory and Methodology Conference. Quebec City, Quebec, Canada. August 26-29, 2018.

Poster presentations

Kwon, E., Patterson, J.D., Beaty, R., Goucher-Lambert, K. (2023) Large Language Model Alignment with Brain Representations during Creative Association. Meeting of the Society for the Neuroscience of Creativity. Toronto, ON.

Kwon, E., Goucher-Lambert, K. (2023) Using neuroimaging to enhance data-driven engineering design tools. Meeting of the Society for the Neuroscience of Creativity. San Francisco, CA.

Kwon, E., Kacollja, A., Shahmiri, E., Ryan, J.D., Shen, K. (2021) Alterations in oculomotor behavior in healthy aging and mild cognitive impairment. *Journal of Vision* 2021, 21(9), 2735. (Presented at Annual Meeting of the Vision Sciences Society) doi.org/10.1167/jov.21.9.2735

Kwon, E., Ryan, J.D., Bazylak, A., Shu, L.H. (2019) Does visual fixation affect idea fixation? 2019 University of Toronto Mechanical & Industrial Engineering Research Symposium. Toronto, ON.

Kwon, E., Bazylak, A., Shu, L.H. (2018) Visual similarity to aid alternative-use concept generation for retired wind-turbine blades. 2018 University of Toronto Mechanical & Industrial Engineering Research Symposium. Toronto, ON. June 2018. (**Best poster award**)

Invited talks and workshops

Workshop chair: "Exploring opportunities and challenges of using LLMs and AI in design", Canadian Design Workshop 3 (CDW3), University of Waterloo. December 2024.

Guest lecture: "Supporting early-stage engineering design using AI-based methods", University of Toronto, Design of Innovative Products (MIE440). October 2023.

Guest lecture: "Concept generation: Team ideation techniques and structured methods", University of California, Berkeley, Human-Centered Design (ME292C/DESINV190). October 2022.

Awards, Honors, & Certificates

NSERC Postdoctoral Fellowship (PDF) <i>National award for postdoctoral research</i>	2025-2027
• \$140 000 total for postdoctoral research	
NSERC Postgraduate Scholarship (PGS-D) <i>National award (CGS-D declined for postgraduate studies outside Canada)</i>	2021-2024
• \$63 000 total for PhD studies	
Certificate in Remote Instruction <i>Awarded for completion of Graduate Remote Instruction Innovation Fellows Program, UC Berkeley</i>	2020
Ontario Graduate Scholarship <i>Provincial award for graduate studies</i>	2018
• \$15 000 total for Master's studies	
Best poster presentation award <i>Departmental award at the University of Toronto</i>	2018

Service & Outreach

Leadership

Student organization officer 2023-2024

Mechanical Engineering Graduate Student Council, UC Berkeley

- Mentorship program: facilitating mentorship between incoming and continuing graduate students
- Social committee: planning departmental events for ME graduate students

Student organization president 2014-2019

Counterpoint, University of Toronto

Outreach

Research intern mentor 2023

Transfer-to-Excellence program, UC Berkeley

- Summer research internship for community college students
- Student: Isaac Hernandez (Mechanical Engineering), MiraCosta College

Course instructor 2023

Splash at Berkeley

- High school educational outreach program, UC Berkeley
- Course: Creative + Sustainable Product Design: Making and Breaking

Service

Panelist 2023

Design Scholars Graduate Student Panel, UC Berkeley

Student Committee Member 2022

Mechanical Engineering Faculty Search, UC Berkeley

Other Experience

Research assistant March 2020 – Aug 2021
Rotman Research Institute (Neuroscience research lab) Toronto, ON, CA

Research and Development Intern Aug 2016
Litostroj Power (Hydropower equipment manufacturing) Ljubljana, Slovenia

Data Science Intern May 2016 – July 2016
Sysomos (Social media data analytics) Toronto, ON, CA

Business Analyst May 2014 – Aug 2015
Environment and Climate Change Canada Toronto, ON, CA