MORGAN FONG

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EDUCATION

University of Illinois, Urbana-Champaign – PhD, Computer Science — Aug 2019 – present
Thesis: Developing and Validating a Survey for Classroom-based Sense of Belonging in Computing
Advisor: Geoffrey Herman

University of California, Berkeley – BA, Computer Science — Aug 2015 – May 2019

RESEARCH

National Renewable Energy Lab — May 2024 – present

Computers and Education Research Group, UIUC — Aug 2019 – present

Embodied Design Research Laboratory, UC Berkeley — Aug 2017 – May 2019

- Studied students' approach to learning computer science, focusing on debugging practices
- Analyzed social interactions in classroom to study students' stance-taking with respect to refactoring

Berkeley Architecture Research Group, UC Berkeley — Aug 2018 – Dec 2018

- Worked on network optimizations for simulating warehouse-scale computing

NetSys Lab, UC Berkeley — Jan 2018 – May 2018

- Worked on building applications as use cases for a worker-based, distributed network architecture

PROJECTS

Collaborative Learning Pedagogies to Foster Equity and Access in Online Environments — Aug 2020 – present

- Interviewed students individually and in focus groups to understand their experiences
- Led a team of graduate student researchers in developing an observation protocol
- Observed groups as they work to better understand equitable versus unequitable participation patterns
- Used survey data to quantitatively analyze trends in students' self-report sense of belonging

CSTed – Teaching Endorsement in Computer Science for High School Teachers — Aug 2020 – present

- Developed an 8-week course on computer systems to prepare computer science high school teachers

Understanding Spatial Skills in Data Structures Diagrams — Aug 2019 – July 2021

- Created a code book to describe linked lists on YouTube and discovered diagram usage themes
- Used code book to analyze videos collected from university-level professors

DoughyesFS – Practicing Debugging — Aug 2019 – Dec 2019

- Designing an intentionally faulty system for more advanced students to debug larger code bases
- Aimed at helping students transition from introductory courses to systems/design courses

PEER-REVIEWED PUBLICATIONS

Fong, M.M., Watkins, A., & Herman, G.L. (2024, August 13-15). Exploring How Computing Courses Contribute to Sense of Belonging. [Poster]. *In Proceedings of the 20th ACM Conference on International Computing Education Research (ICER)*, Melbourne, Australia.

Fong, M.M., Huang, S., Alawini, A., Silva, M., & Herman, G.L. (2024, March 20-23). Exploring Computing Students' Sense of Belonging Before and After a Collaborative Learning Course. *In Proceedings of the 2024 SIGCSE Technical Symposium on Computer Science Education*, Portland, OR.

George, K.L., Fowler M., Ojha, V., **Fong, M.M.**, Isenegger, K., Perdriau, C., Saffar Perez, M., Gertner, Y., & Lewis, C.M. (2024, March 20-23). Leveraging Kotter's 8 Stage Model of Organizational Change to Understand Broadening Participation in Computing. [Poster]. *In Proceedings of the 2024 SIGCSE Technical Symposium on Computer Science Education*, Portland, OR.

Nelson-Fromm, T., Barkhuff, G., Everson, J., **Fong, M.M.**, & Rivera, E. (2024, March 20-23). Graduate Students in CS Education Research: Continuing to Build a Multinational Community. [Birds of a

Feather]. *In Proceedings of the 2024 SIGCSE Technical Symposium on Computer Science Education,* Portland, OR.

Chen, H., **Fong, M.M.**, Herman, G.L., & Silva, M. (2023, October 18-21). Student Autonomy in Collaborative Learning: Effects of Meeting Time and Team Consistency. *In Proceedings of the 2023 IEEE Frontiers in Education Conference (FIE)*, College Station, TX.

Fong, M.M., (2023, August 8-10). Understanding the Impact of Collaborative Learning on Sense of Belonging [Doctoral Consortium]. *In Proceedings of the 19th ACM Conference on International Computing Education Research (ICER)*, Chicago, IL.

Fong, M.M., DeLiema, D., Flood, V.J., & Walker-van Aalst, O. (2023). Contesting sociocomputational norms: Computer programming instructors and students' stancetaking around refactoring. *International Journal of Computer-Supported Collaborative Learning.*

Fong, M.M., Butler, L., Alawini, A., Herman, G.L., & Silva, M. (2023, June 25-28). Developing tools, pedagogies, and policies for computer-based collaborative learning activities [NSF Grantees Poster Session]. *In Proceedings of the 2023 American Society for Engineering Education Annual Conference & Exposition*, Baltimore, MD.

Fong, M.M. (2023, March 15-18). OP-CLUStR: An Observation Protocol for Cooperative Learning Using Structured Roles [ACM Student Research Competition]. *In Proceedings of the 2023 SIGCSE Technical Symposium on Computer Science Education,* Toronto, Canada.

Fong, M.M., Butler, L., Chen, H., & Herman, G.L. (2022, October 8-11). Validating an Observation Protocol for Structured Roles in Cooperative Learning. *In Proceedings of the 2022 IEEE Frontiers in Education Conference (FIE)*, Uppsala, Sweden.

Fong, M.M., Chen, H., Butler, L., & Herman, G.L. (2022, June 26-29). Developing an Observation Protocol for Cooperative Learning. *In Proceedings of the 2022 American Society for Engineering Education Annual Conference & Exposition*, Minneapolis, MN.

Mahmood, M.S., Chen, H., **Fong, M.M.**, & Herman, G.L. (2022, June 26-29). Work in Progress: Exploring Students' Misconceptions of Cache Memories. *In Proceedings of the 2022 American Society for Engineering Education Annual Conference & Exposition*, Minneapolis, MN.

Fong, M.M., Poulsen, S., & Herman, G.L. (2021, July 26-29). What's in a Linked List? A Phenomenographic Study of Data Structures Diagrams. *In Proceedings of the 2021 American Society for Engineering Education Annual Conference & Exposition*, Long Beach, CA.

Fong, M.M. (2021, June 26-July 1). Will It POGIL? Exploring Group Participation in Synchronous, Online Collaborative Learning [Doctoral Consortium]. *In Proceedings of the 26th ACM Conference on Innovation and Technology in Computer Science Education*, Paderborn, Germany.

Fong, M.M., Aalst, O.W., Flood, V., & DeLiema, D. (2020, June 19-23). When Features become Bugs: Stance-taking around Refactoring in a Coding Classroom. In Yasmin Kafai (Chair), Turning Bugs into Learning Opportunities: Understanding Debugging Processes, Perspectives and Pedagogies. *Symposium conducted at the International Conference of the Learning Sciences*, Nashville, TN.

OTHER PUBLICATION

Fong, M.M. (2021, May 19-22). Understanding Student Experiences in Online Collaborative Groupwork. In *Technology applications, analytics, and performance in sports and education* [Panel presentation]. International Congress of Qualitative Inquiry, Champaign-Urbana, IL.

FELLOWSHIPS & AWARDS

Graduate Student Outstanding Service Award (2024), SIGCSE TS Outstanding Reviewer (2024), Graduate College Conference Participation Award (2021), NSF RESET Student Scholar (2021), NSF GRFP (2020), Outstanding Teaching Assistant (2020), Teacher Ranked as Excellent (2019-2020), Richard T. Cheng Fellowship (2019)

TEACHING EXPERIENCE

Computer Architecture, Instructor of Record – UIUC Spring 2024

- Co-taught an introductory-level computer architecture course
- Intended audience: second-year computer science majors

Computer Systems for CS Teachers, Instructor of Record – UIUC Fall 2023, Spring 2022

- Taught a half semester, online course covering a variety of computer systems topics
- Intended audience: in-service K-12 teachers

Teaching Assistant Training Course Staff – UIUC Spring 2023

- Facilitated discussions, graded weekly responses

Topics in Computer Science, Instructor of Record– University Lab High School Fall 2021

- Developed and taught a one semester course covering a variety of computer systems topics
- Developed unplugged activities on binary, deadlock, cryptography, and more

Computer Architecture, Teaching Assistant– UIUC Spring 2020, Fall 2019

- Wrote exam questions, developed labs, facilitated discussions, and held office hours

Course Staff – UC Berkeley Spring 2016 – Spring 2019

- Worked as tutor and lab assistant for introductory computer science courses
- Helped students with general understanding of course concepts and practice problems

INDUSTRY EXPERIENCE

Graduate Research Intern – National Renewable Energy Laboratory May 2024 – present

- Developed a survey for graduate-level computational sustainability internship programs
- Conducted literature search on hidden labor, non-author contributions to research

Developer Intern – The One Network, Ericsson May 2021 – Aug 2021

- Wrote and automated extensive API testing for a microservices-based architecture
- Implemented and tested bug fixes related to user security
- Worked with Postman, Kubernetes, and Docker

SSD Firmware Process Intern – Micron Technology May 2018 – Aug 2018

- Assisted development process by providing support on and troubleshooting a variety of tools
- Gained familiarity with Coverity Static Analysis, Blackduck Protex, Jenkins, and Atlassian tools

Software Engineer Intern – Live Nation May 2017 – Aug 2017

- Implemented an automated back-end tool to assist the email marketing team with code documentation
- Worked with cloud-computing platforms AWS Lambda/DynamoDB and Salesforce Marketing Cloud

Course Staff – UC Berkeley Jan 2016 – May 2019

- Worked as tutor and lab assistant for introductory computer science courses
- Helped students with general understanding of course concepts and practice problems

SERVICE

SIGCSE Technical Symposium Reviewer Since 2021

ITiCSE Conference Reviewer Since 2020

CS Grad Ambassador Since 2020

CITL Graduate Academy for College Teaching Facilitator 2020-2021