Sam Lau

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Research Interests

Human-computer interaction, end-user programming, data science education, computer science education

Education

University of California, San Diego

Ph.D. Cognitive Science — 2018 – 2023
Advisor: Philip Guo

University of California, Berkeley

M.S. Computer Science — 2017 – 2018
Advisor: Joshua Hug

B.S. Electrical Engineering and Computer Science — 2013 – 2017

Books and Monographs

Textbooks

[B.1] Sam Lau, Joseph Gonzalez, Deborah Nolan. Learning Data Science. O'Reilly Media, Inc., 2023.

Peer-Reviewed Publications

Conference Papers

[C.8] Christopher Lum*, Guoxuan Xu*, Sam Lau (*equal contribution). "I'm not sure, but...": Expert Practices that Enable Effective Code Comprehension in Data Science. ACM Technical Symposium on Computer Science Education (SIGCSE), 2025.

[C.7] Ylesia Wu*, Qirui Zheng*, Sam Lau (*equal contribution). How Novices Use Program Visualizations to Understand Code that Manipulates Data Tables. ACM Technical Symposium on Computer Science Education (SIGCSE), 2025.

[C.6] James Prather, Juho Leinonen, Natalie Kiesler, Jamie Gorson Benario, Sam Lau, Stephen MacNeil, Narges Norouzi, Simone Opel, Vee Pettit, Leo Porter, Brent N Reeves, Jaromir Savelka, David H Smith IV, Sven Strickroth, Daniel Zingaro. Beyond the Hype: A Comprehensive Review of Current Trends in Generative AI Research, Teaching Practices, and Tools. ACM Conference on Innovation and Technology in Computer Science Education (ITiCSE), 2025.

[C.5] Sam Lau, Philip J. Guo. From "Ban It Till We Understand It" to "Resistance is Futile": How University Programming Instructors Plan to Adapt as More Students Use AI Code Generation and Explanation Tools such as ChatGPT and GitHub Copilot. ACM Conference on International Computing Education Research (ICER), 2023.

[C.4] Sam Lau, Justin Eldridge, Shannon Ellis, Aaron Fraenkel, Marina Langlois, Suraj Rampure, Janine Tiefenbruck, Philip J. Guo. The Challenges of Evolving Technical Courses at Scale: Four Case Studies of Updating Large Data Science Courses. ACM Conference on Learning @ Scale (L@S), 2022.

[C.3] Sam Lau, Deborah Nolan, Joseph Gonzalez, Philip J. Guo. How Computer Science and Statistics Instructors Approach Data Science Pedagogy Differently: Three Case Studies. ACM Technical Symposium on Computer Science Education (SIGCSE), 2022.

[C.2] Sam Lau, Sruti Srinivasa Ragavan, Ken Milne, Titus Barik, Advait Sarkar. TweakIt: Supporting End-User Programmers Who Transmogrify Code. ACM Conference on Human Factors in Computing Systems (CHI), 2021.

[C.1] Sam Lau, Ian Drosos, Julia M. Markel, Philip J. Guo. The Design Space of Computational Notebooks: An Analysis of 60 Systems in Academia and Industry. IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC), 2020.

Workshop and Poster Papers

[W.5] Sam Lau[*], Sean Kross[*], Eugene Wu, Philip J. Guo ([*]equal contribution). Teaching Data Science by Visualizing Data Table Transformations: Pandas Tutor for Python, Tidy Data Tutor for R, and SQL Tutor. International Workshop on Data Systems Education (DataEd), 2023.

[W.4] Sam Lau, Philip J. Guo. CodeHound: Helping Instructors Track Pedagogical Code Dependencies in Course Materials. ACM SIGPLAN International Symposium on SPLASH-E (SPLASH-E), 2022.

[W.3] Sam Lau, Philip J. Guo. Data Theater: A Live Programming Environment for Prototyping Data-Driven Explorable Explanations. Workshop on Live Programming (LIVE), 2020

[W.2] Samuel Lau, Tricia J. Ngoon, Vineet Pandey, Scott Klemmer. Experiment Reconstruction Reduces Fixation on Surface Details of Explanations. Poster in Proceedings of C&C 2019: ACM SIGCHI Conference on Creativity and Cognition, 2019

[W.1] Vinitra Swamy, Allen Guo, Samuel Lau, Wilton Wu, Madeline Wu, Zachary Pardos, David Culler. Deep Knowledge Tracing for Free-Form Student Code Progression. Poster in Proceedings of AIED 2018: *International Conference on Artificial Intelligence in Education*, June 2018

Journal Articles

[J.1] Shou-Tian Zheng, Xiang Zhao, Samuel Lau, Addis Fuhr, Pingyun Feng, Xianhui Bu. Entrapment of metal clusters in metal-organic framework channels by extended hooks anchored at open metal sites. In JACS: *Journal of the American Chemical Society*, 2013.

Awards and Honors

UCSD Cognitive Science Teaching Excellence Award	2019
UC Berkeley EECS Distinguished Graduate Student Instructor Award	2018

Teaching Experience

Instructor

UCSD DSC 80: Practice and Application of Data Science	Fall 2023, Spring 2024
UCSD DSC 106: Introduction to Data Visualization	Winter 2024
UCSD DSC 10: Principles of Data Science	Summer 2022
UCB Data 100: Principles and Techniques of Data Science Teaching rated 6.2 / 7.0 (dept avg 5.8), 92% response rate	Summer 2019
UCB Data 8: Foundations of Data Science Teaching rated 6.3 / 7.0 (dept avg 5.8), 84% response rate	Summer 2017

Graduate Teaching Assistant

UCSD COGS 18: Introduction to Python	Winter 2022
UCSD COGS 124: HCI Technical Systems Research	Fall 2020
UCSD COGS 108: Data Science in Practice	Fall 2019, Winter 2019, Winter 2020
UCSD COGS 10: Cognitive Consequences of Technology	Spring 2019
Berkeley Data 100: Principles and Techniques of Data Science	Spring 2017, Fall 2017
Berkeley Data 8: Foundations of Data Science	Fall 2016, Spring 2016, Fall 2015
Berkeley CS 169: Software Engineering	Spring 2015
Berkeley CS 61AS: Structure and Interpretation of Computer Programs	Spring 2014, Fall 2014

Other Employment and Projects

Microsoft Research, Cambridge, United Kingdom Research Intern, Future of Work Lab, Host: Advait Sarkar	06/2020 - 08/2020
Counsyl, San Francisco, CA Software Engineering Intern – designed and implemented appointment scheduling web application.	05/2016 - 08/2016
Khan Academy, Mountain View, CA Software Engineering Intern – deployed article authoring system for interactive content. As of 2020, used for over 95% of articles on Khan Academy.	05/2015 - 08/2015

Berkeley Public Schools Fund, Berkeley, CA 08/2013 - 06/2014
Software Engineering Intern – built crowdfunding system used to raise over $66,000 for 20 Berkeley public schools.