

Sam Lau

	PhD Candidate Department of Cognitive Science University of California, San Diego (UCSD)	Updated: October 12, 2022 Email: 1au@ucsd.edu https://samlau.me
RESEARCH INTERESTS	Human-computer interaction, end-user programming, data science education, computer science education	
EDUCATION	University of California, San Diego Ph.D. Cognitive Science Advisor: Philip Guo	2018 – 2023 (expected)
	University of California, Berkeley M.S. Computer Science Advisor: Joshua Hug GPA: 3.93	2017 – 2018
	B.S. Electrical Engineering and Computer Science GPA: 3.96	2013 – 2017
AWARDS AND HONORS	UCSD Cognitive Science Teaching Excellence Award	2019
	UC Berkeley EECS Distinguished Graduate Student Instructor Award	2018
TEACHING EXPERIENCE	Instructor UCSD DSC 10: Principles of Data Science 100% student recommendation rate, 44% response rate	Summer 2022
	Berkeley Data 100: Principles and Techniques of Data Science Teaching rated 6.2 / 7.0 (dept avg 5.8), 92% response rate <i>First Berkeley summer offering of Data 100</i>	Summer 2019
	Berkeley Data 8: Foundations of Data Science Teaching rated 6.3 / 7.0 (dept avg 5.8), 84% response rate <i>First Berkeley summer offering of Data 8</i>	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

BOOKS AND
MONOGRAPHS

Textbooks

- [B.1] Samuel Lau, Joseph Gonzalez, Deborah Nolan. Learning Data Science. O'Reilly Media, 2023 (forthcoming). www.textbook.ds100.org.
One of the first textbooks to cover the entire data science lifecycle. Used by 2,000 Berkeley students annually with an additional 20,000 readers from 30 countries.

PEER-
REVIEWED
PUBLICATIONS

Conference Papers

- [C.4] Sam Lau, Justin Eldridge, Shannon Ellis, Aaron Fraenkel, Marina Langlois, Suraj Rampure, Janine Tiefenbruck, Philip 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.
Instructors of large technical courses run into major logistical challenges that take time away from teaching.
- [C.3] Sam Lau, Deborah Nolan, Joseph Gonzalez, Philip Guo. How Computer Science and Statistics Instructors Approach Data Science Pedagogy Differently: Three Case Studies. ACM Technical Symposium on Computer Science Education (SIGCSE), 2022.
Real-world case studies show tradeoffs in balancing computer science and statistics in data science teaching.
- [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.
Placing live previews of code outputs directly in spreadsheets enables data analysts to tweak and reuse Python examples without needing Python expertise.
- [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.
Computational notebooks vary widely in data import, code editing, code execution, and output format.

Workshop and Poster Papers

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

Static analysis of a course's entire codebase enables automatic tracking of pedagogical code dependencies.

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

Separating logic from presentation simplifies the process of creating explorable explanations.

- [P.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

Asking people to mentally replicate an experiment briefly reduces the allure of scientific terminology.

- [P.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

Deep learning models trained on free-form student code predict learning pace.

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.

OTHER EMPLOYMENT AND PROJECTS

Microsoft Research, Cambridge, United Kingdom 06/2020 - 08/2020

Research Intern, Future of Work Lab, Host: Advait Sarkar

Counsyl, San Francisco, CA 05/2016 - 08/2016

Software Engineering Intern – designed and implemented appointment scheduling web application.

Khan Academy, Mountain View, CA 05/2015 - 08/2015

Software Engineering Intern – deployed article authoring system for interactive content. As of 2020, used for over 95% of articles on Khan Academy.

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.