

Ian Drosos

	Researcher Microsoft Research Cognitive Science Ph.D.	Updated: May 13, 2025 linkedin.com/in/ian-drosos/ iandrosos.me
RESEARCH INTERESTS	human-computer interaction; designing and building AI tools to support the workflows of developers, data scientists, and learners.	
EDUCATION	University of California, San Diego Ph.D. in Cognitive Science Dissertation: <i>Synthesizing Transparent and Inspectable Technical Workflows</i> , Advisor: Philip Guo	2017 – 2022
	North Carolina State University M.S. in Computer Science Thesis: <i>HappyFace: Identifying and Predicting Frustrating Learning Obstacles at Scale</i> , Advisor: Chris Parnin	2015 – 2017
	Southern Polytechnic State University B.S. in Computer Science	2007 – 2011
EXPERIENCE	Microsoft Research, Cambridge, UK <i>Researcher</i> HCI + AI research of the design of intelligent systems on the Tools for Thought project . I study how AI can help users critically think and have greater control over AI-generated output during data analysis and programming tasks through HCI research of professional, end-user, and learner workflows. [C.8-15; C.X2-3; W.1-2; W.X1]	2022 –
	UCSD – The Design Lab, La Jolla, CA <i>Researcher – Ph.D. Candidate</i> HCI research in providing better experiences for data scientists, programmers, content creators, and learners. Published six papers and won two paper awards. [C.2-7]	2017 – 2022
	UCSD, La Jolla, CA <i>Instructor</i> - HCI Portfolio Design Studio (COGS121)	2018 – 2022
	<i>Teaching Assistant</i> - Interaction Design (COGS120/CSE170) - Human-Computer Interaction Programming Studio (COGS121) - HCI Portfolio Design Studio (COGS121) - Data-Driven UX/Product Design (COGS127)	
	Autodesk, San Rafael, CA <i>Intern – User Interface Research</i> Investigated barriers to providing expert (human) help to questions about feature-rich software like Autodesk Fusion 360. Designed, implemented, and deployed a custom survey prototype to collect feedback from experts (n=28). Paper in submission. [C.X1].	01/2021 – 04/2021

Microsoft, Redmond, WA

Research Intern – Program Synthesis

07/2018 – 12/2018

Designed, implemented, and evaluated (n=12) a prototype called Wrex for generating readable Python code through program synthesis within Jupyter notebooks using JavaScript and Python. Published the results at CHI2020, which won Best Paper. [C.4]

Verizon, Alpharetta, GA

Member Technical Staff I & II – Systems Engineering

2011 – 2015

Full-stack software engineer developing enterprise systems using Java, PL/SQL, JavaScript, and HTML.

PUBLICATIONS

(C)onference, (J)ournal, and (W)orkshop.

- C.15 Ian Drosos, Jack Williams, Advait Sarkar, Nicholas Wilson, Sean Rintel, and Payod Panda. 2025. Dynamic Prompt Middleware: Contextual Prompt Refinement Controls for Comprehension Tasks. In CHIWORK '25: Proceedings of the 4th Annual Symposium on Human-Computer Interaction for Work (CHIWORK 2025). (Patent filed). [\[Link\]](#) ***2nd Place / 1,064 projects in internal Hackathon (Everyday AI Executive Challenge)**
- C.14 Hao-Ping (Hank) Lee, Advait Sarkar, Lev Tankelevitch, Ian Drosos, Sean Rintel, Richard Banks, and Nicholas Wilson. 2025. The Impact of Generative AI on Critical Thinking: Self-Reported Reductions in Cognitive Effort and Confidence Effects From a Survey of Knowledge Workers. In Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI 2025).
- C.13 Bhuvanashree Murugadoss, Christian Poelitz, Ian Drosos, Vu Le, Nick McKenna, Carina Negreanu, Chris Parnin, and Advait Sarkar. 2025. Evaluating the Evaluator: Measuring LLMs' Adherence to Task Evaluation Instructions. In Proceedings of the AAAI Conference on Artificial Intelligence (AAAI 2025). [\[Link\]](#)
- C.12 Majeed Kazemitabaar, Jack Williams, Ian Drosos, Tovi Grossman, Austin Henley, Carina Negreanu, and Advait Sarkar. 2024. Improving Steering and Verification in AI-Assisted Data Analysis with Interactive Task Decomposition. In Proceedings of The ACM Symposium on User Interface Software and Technology (UIST 2024). [\[Link\]](#)
- C.11 Advait Sarkar, Xiaotong (Tone) Xu, Neil Toronto, Ian Drosos, and Christian Poelitz. 2024. When Copilot Becomes Autopilot: Generative AI's Critical Risk to Knowledge Work and a Critical Solution. The European Spreadsheet Risks Interest Group Conference (EuSpRIG 2024). [\[Link\]](#)
- C.10 Ian Drosos, Advait Sarkar, Xiaotong (Tone) Xu, Carina Negreanu, Sean Rintel, and Lev Tankelevitch. 2024. "It's like a rubber duck that talks back": Understanding Generative AI-Assisted Data Analysis Workflows through a Participatory Prompting Study. In Proceedings of the Symposium on Human-Computer Interaction for Work. (CHIWORK 2024). [\[Link\]](#)

- W.2 Andrew D. Gordon, Carina Negreanu, José Cambronero, Rasika Mudumbai Chakravarthy, Ian Drosos, Hao Fang, Bhaskar Mitra, Hannah Richardson, Advait Sarkar, Stephanie Simmons, Jack Williams, Ben Zorn. 2024. Co-audit: tools to help humans double-check AI-generated content. In the Workshop on Evaluation and Usability of Programming Languages and Tools (PLATEAU 2024). [\[Link\]](#)
- W.1 Advait Sarkar, Ian Drosos, Rob DeLine, Andrew D. Gordon, Carina Negreanu, Sean Rintel, Jack Williams, and Ben Zorn. 2023. Participatory prompting: a user-centric research method for eliciting AI assistance opportunities in knowledge workflows. In the Workshop of the Psychology of Programming Interest Group (PPIG 2023). [\[Link\]](#)
- C.9 Ian Drosos, Nick Wilson, Andrew D. Gordon, Sruti Ragavan, and Jack Williams. 2023. FxD: a functional debugger for dysfunctional spreadsheets. In Proceedings of the Symposium on Visual Languages and Human-Centric Computing (VL/HCC 2023). (Patent filed). [\[Link\]](#). *FxD is now part of [\[Excel Labs!\]](#)*
Best Paper, Honorable Mention Award
- C.8 Kasra Ferdowsi, Jack Williams, Ian Drosos, Andrew D. Gordon, Carina Negreanu, Advait Sarkar, Benjamin Zorn. 2023. ColDeco: An End User Spreadsheet Inspection Tool for AI-Generated Code. In Proceedings of the Symposium on Visual Languages and Human-Centric Computing (VL/HCC 2023). (Patent filed). [\[Link\]](#)
- C.7 Ian Drosos and Philip Guo. 2022. The Design Space of Livestreaming Equipment Setups: Tradeoffs, Challenges, and Opportunities. In Proceedings of the ACM Designing Interactive Systems Conference (DIS 2022). [\[Link\]](#)
- C.6 Ian Drosos and Philip Guo. 2021. Streamers Teaching Programming, Art, and Gaming: Cognitive Apprenticeship, Serendipitous Teachable Moments, and Tacit Expert Knowledge. In Proceedings of the Symposium on Visual Languages and Human-Centric Computing, short paper (VL/HCC 2021). [\[Link\]](#)
Best Short Paper, Honorable Mention Award
- C.5 Sam Lau, Ian Drosos, Julia Markel and Philip Guo. 2020. The Design Space of Computational Notebooks: An Analysis of 60 Systems in Academia and Industry. In Proceedings of the Symposium on Visual Languages and Human-Centric Computing (VL/HCC 2020). [\[Link\]](#)
- C.4 Ian Drosos, Titus Barik, Philip Guo, Robert DeLine, and Sumit Gulwani. 2020. Wrex: A Unified Programming-By-Example Interaction for Synthesizing Readable Code for Data Scientists. In Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI 2020). [\[Link\]](#)
Best Paper Award
- C.3 Adam Rule, Ian Drosos, Aurélien Tabard, and James D. Hollan. 2018. Aiding Collaborative Reuse of Computational Notebooks with Annotated Cell Folding. In Proceedings of the ACM on Human-Computer Interaction (CSCW 2018). [\[Link\]](#)

	<p>C.2 René Just, Chris Parnin, Ian Drosos, and Michael D. Ernst. 2018. Comparing developer-provided to user-provided tests for fault localization and automated program repair. In Proceedings of the ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA 2018). [Link]</p> <p>C.1 Ian Drosos, Philip Guo, and Chris Parnin. 2017. HappyFace: Identifying and Predicting Frustrating Obstacles for Learning Programming at Scale. In Proceedings of the Symposium on Visual Languages and Human-Centric Computing (VL/HCC 2017). [Link]</p>
IN SUBMISSION	<p>W.X1 Advait Sarkar and Ian Drosos. 2025. Vibe coding: programming through congenial trust in code-generating AI large language model agents. (In review).</p> <p>C.X3 Ian Drosos, Advait Sarkar, Xiaotong (Tone) Xu, and Neil Toronto. 2025. “It makes you think”: Provocations Restore Critical Thinking During AI-Assisted Tasks. (In review). [Link]</p> <p>C.X2 Ian Drosos, Advait Sarkar, and Andrew D. Gordon. 2023. “My toxic trait is thinking I’ll remember this”: Gaps in the learner experience of video tutorials for feature-rich software. (In review). [Link]</p> <p>C.X1 Ian Drosos, Jo Vermeulen, George Fitzmaurice, Justin Matejka. 2024. Nanomen-toring: Investigating How Quickly People Can Help People Learn Feature-Rich Software. (In review).</p>
AWARDS AND PATENTS	<p><i>Paper Awards</i></p> <ul style="list-style-type: none"> - VL/HCC 2023. Best Paper, Honorable Mention Award. [C.9] - VL/HCC 2021. Best Short Paper, Honorable Mention Award. [C.6] - CHI 2020. Best Paper Award. [C.4] <p><i>Hackathons</i></p> <ul style="list-style-type: none"> - Microsoft Global Hackathon 2024 Executive Challenge Winner (2nd place / 1,064 projects in the ‘Everyday AI’ Challenge). Promptly: Dynamically generated UI for AI. - Microsoft Global Hackathon 2023 Executive Challenge Winner (2nd place / 182 projects in the ‘Change the Game’ Challenge). Game Development Copilot: Making a Dream Game. <p><i>Patents</i></p> <ul style="list-style-type: none"> - Techniques for formula debugging. Advait Sarkar, Sruti Srinivasa Ragavan, Jack Williams, Ian Drosos, Nicholas Wilson, Irena Berezovsky, Lev Solodkin, Andrew Gordon. 2025. US/18401217. [C.9] - Range preview with elisions. Advait Sarkar, Sruti Srinivasa Ragavan, Jack Williams, Ian Drosos, Nicholas Wilson, Irena Berezovsky, Lev Solodkin, Andrew Gordon. 2025. US/18401240. [C.9] - Generation of multi-dimensional array of intermediate values in multiple code executions. Benjamin Zorn, Kasra Ferdowsi, Jack Williams, Carina Negreanu, Andrew Gordon, Advait Sarkar, Ian Drosos. 2024. US/18154741. [C.8]

SKILLS	<i>Interaction design</i> (Figma, prototyping) <i>Qualitative research</i> (Thematic analysis, interviews, content analysis, surveys, comparative tool studies, design probes) <i>Quantitative analysis</i> (Python and R) Full-stack software engineering (Python, JavaScript, Java, SQL)
PROGRAMMING LANGUAGES	Python, JavaScript, Java, R, SQL
SERVICE	<i>Program Committee</i> - Intelligent User Interfaces 2025 - Learning @ Scale 2023-2024 - VL/HCC 2023-2024 <i>Reviewer</i> - CHI 2022-2025 - VL/HCC 2021 - UIST 2020
INVITED TALKS	<i>Rising Stars Applied Research Talk Series - Designing Better Human-AI Workflows: Dynamic UX, Provocations, and Critical Engagement</i> Microsoft (E+D Applied Research), February 2025 <i>LLM Forum - Understanding Generative AI-Assisted Data Analysis Workflows</i> European Bioinformatics Institute, September 2024 <i>Learning programming in the era of LLMs</i> Google, January 2024
MENTORSHIP	Hank Lee, <i>Microsoft Research intern</i> , Summer 2024 Bhuvanashree Murugadoss, <i>Microsoft Research Fellow</i> , 2023-2024 Xiaotong (Tone) Xu, <i>Microsoft Research intern</i> , Summer 2023 Majeed Kazemitabaar, <i>Microsoft Research intern</i> , Summer 2023 Kasra Ferdowsi, <i>Microsoft Research intern</i> , Summer 2022