Ian Drosos

Researcher
Microsoft Research
Cognitive Science Ph.D.

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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 — 2017 – 2022
Thesis: *Synthesizing Transparent and Inspectable Technical Workflows*, Advisor: Philip Guo

North Carolina State University
M.S. in Computer Science — 2015 – 2017
Thesis: *HappyFace: Identifying and Predicting Frustrating Learning Obstacles at Scale*, Advisor: Chris Parnin

Southern Polytechnic State University
B.S. in Computer Science — 2007 – 2011

Experience

Microsoft Research, Cambridge, UK
Researcher — 2022 –
HCI research in bringing intelligence to end-user programming and data workflows to help users think more deeply about their problems or learn new skills. Partnered with product teams at Microsoft to provide design and UX insights by transferring research findings to product managers and designers. [C.8-14; C.X2-X4; W.1-2]

UCSD – The Design Lab, La Jolla, CA
Researcher – Ph.D. Candidate — 2017 – 2022
HCI research in providing better experiences for developers, data scientists, learners, and content creators. [C.2-7]

UCSD, La Jolla, CA
Instructor — 2018 – 2022
- HCI Portfolio Design Studio (COGS121)

Teaching Assistant
- 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
Intern – User Interface Research — 01/2021 – 04/2021
Researching, prototyping, and studying software learning with the HCI and Visualization team at Autodesk Research [C.X1].

Microsoft, Redmond, WA
Research Intern – Program Synthesis — 07/2018 – 12/2018
Researching, prototyping, and studying program synthesis interactions for data scientists on the PROSE team (microsoft.github.io/prose). [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.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]

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]

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]

In Submission

C.X4 Ian Drosos, Jack Williams, Advait Sarkar, and Nicholas Wilson. 2025. Dynamic Prompt Middleware: Contextual Prompt Refinement Controls for Comprehension Tasks. (Patent filed). (In review). [Link] ***2nd Place / 1,064 projects in internal Hackathon (Everyday AI Executive Challenge) and 1st place Hack for differentiated experiences on Copilot+ PCs Topic Challenge***

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]

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]

C.X1 Ian Drosos, Jo Vermeulen, George Fitzmaurice, Justin Matejka. 2024. Nanomentoring: Investigating How Quickly People Can Help People Learn Feature-Rich Software. (In review).

Skills

Figma (interaction design)
Qualitative research (thematic analysis, interviews, content analysis, surveys, comparative tool studies, design probes)
Quantitative analysis (Python and R)

Programming Languages

Python, JavaScript, Java, R, LaTeX

Service

Program Committee
Intelligent User Interfaces 2025
Learning @ Scale 2023-2024
VL/HCC 2023-2024

Reviewer
CHI 2022-2025
VL/HCC 2021
UIST 2020

Invited talks

LLM Forum - Understanding Generative AI-Assisted Data Analysis Workflows
European Bioinformatics Institute, September 2024

Learning programming in the era of LLMs
Google, January 2024

Mentorship

Hank Lee, *Microsoft Research intern*, Summer 2024
Bhuvanashree Murugadoss, *Microsoft Research Fellow*, 2023-2024
Xiaotong (Tone) Xu, *Microsoft Research intern*, Summer 2023
Majeed Kazemitabaar, *Microsoft Research intern*, Summer 2023
Kasra Ferdowsi, *Microsoft Research intern*, Summer 2022