Ian Drosos

HCI Researcher
Microsoft Research
Cognitive Science Ph.D.

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Research Interests

human-computer interaction; designing and implementing tools to support and enhance the workflows of content creators, 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. Partnered with product teams at Excel to provide design and UX insights as part of transferring research findings to product managers and designers. [C.8-10; C.X2-X5; J.X; 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)
- Quarter: Spring 2022

Teaching Assistant
Interaction Design (COGS120/CSE170)
- Quarters: Winter 2018, 2019
- Instructor: Scott Klemmer

Human-Computer Interaction Programming Studio (COGS121)
- Spring 2018, 2019
- Instructor: Philip Guo

HCI Portfolio Design Studio (COGS121)
- Quarters: Spring 2020, 2021
- Instructor: Philip Guo

Data-Driven UX/Product Design (COGS127)
- Quarter: Winter 2022
- Instructor: Sean Kross

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.

In prep (names not final):

- C.X5 Prompting strategies for LLM-as-a-judge evaluations
- C.X4 The design space of AI explanations and control.
- C.X3 LLMs for critical thinking and decision-making.

C.X2 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 review).

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).

J.X 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.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. European Spreadsheet Risks Interest Group (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. PLATEAU Workshop (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. Proceedings of the 34th Annual Conference 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 released as 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 Designing Interactive Systems Conference 2022 (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 2020 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 Conference on Computer-Supported Cooperative Work and Social Computing. ACM, Article 150 (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 27th 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]

Tools

Figma, Jupyter Notebook, RStudio, DaVinci Resolve

Programming Languages

Python, JavaScript, HTML, Java, R, LaTeX

Service

Program Committee
Learning @ Scale 2024
VL/HCC 2024
Learning @ Scale 2023
VL/HCC 2023

Reviewer
CHI 2024
CHI 2023
CHI 2022
VL/HCC 2021
UIST 2020

Invited talks

Learning programming in the era of LLMs, Google, January 2024

Mentorship

Xiaotong (Tone) Xu, *Microsoft Research intern*, Summer 2023
Majeed Kazemitabaar, *Microsoft Research intern*, Summer 2023
Kasra Ferdowsi, *Microsoft Research intern*, Summer 2022