Ian Drosos

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.8-12; C.X2-X6; 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.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 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 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 PREP OR SUBMISSION

Names not final

C.X6 Investigating Knowledge Workers' Critical Thinking in Generative AI Usage. Hank Lee et al.

C.X5 Dynamic generated UX improves user control over AI responses and explanation. Ian Drosos et al.

C.X4 "It makes us think": Provocations Restore Critical Thinking During AI-Assisted Tasks. Ian Drosos et al.

C.X3 Evaluating the Evaluator: Measuring LLMs' Adherence to Task Evaluation Instructions Bhuvanashree Murugadoss, Christian Poelitz, Ian Drosos, Vu Le, Nick McKenna, Carina Suzana Negreanu, Chris Parnin, Advait Sarkar. (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).

TOOLS   Figma, Jupyter Notebook, RStudio, DaVinci Resolve

PROGRAMMING   Python, JavaScript, Java, R, LaTeX
LANGUAGES

SERVICE   *Program Committee*
               Learning @ Scale 2023-2024
               VL/HCC 2023-2024

               Reviewer
               CHI 2022-2024
               VL/HCC 2021
               UIST 2020

INVITED TALKS *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