

Benjamin Xie

PhD student, University of Washington

Research Interests

I am a human-computer interaction (HCI) researcher that builds interactive intelligent learning tools to teach computing more equitably. I design and implement systems where learners exercise agency while collaborating with intelligent agents to learn computing the way they want to.

topics human-computer interaction, interactive artificial intelligence, computing education, intelligent tutoring systems

Education

2016– **Ph.D. in Information Science**, UNIVERSITY OF WASHINGTON, SEATTLE.
Advisor: Andrew J. Ko.

2015–2016 **M.Eng. in Computer Science**, MASSACHUSETTS INSTITUTE OF TECHNOLOGY.
Advisor: Hal Abelson.
Thesis: *Progression of Computational Thinking Skills Demonstrated by App Inventor Users*

2011–2015 **B.S. in Computer Science**, MASSACHUSETTS INSTITUTE OF TECHNOLOGY.
Advisor: Hal Abelson.

Experience

2016– **University of Washington**, RESEARCH ASSISTANT.
Code & Cognition Lab. Designing, implementing, and evaluating interactive intelligent learning tools to teach computing more equitably.

2014–2016 **Massachusetts Institute of Technology**, RESEARCH ASSISTANT.
MIT App Inventor (Center for Mobile Learning). Analyzed user data to model, understand, and improve learning experiences of web tool that teaches app development.

2015 **NovoEd**, SOFTWARE ENGINEERING INTERN.
Wrote automated tests and trending algorithm for social online learning environment.

2014 **AppNexus**, SOFTWARE ENGINEERING INTERN.
Created system to integrate and streamline log data.

2013 **eBay**, SOFTWARE ENGINEERING INTERN.
Performed large scale data analysis on cross-platform usage and behavior on marketplace.

2012–2013 **Massachusetts Institute of Technology**, RESEARCH ASSISTANT.
MIT Education Arcade. Prototyped and tested learning resources for location-based augmented reality game, improved web-based game authoring tool.

Awards

- 2016–2021 National Science Foundation (NSF) Graduate Research Fellowship
- 2017 Golden Key Honour Society Nomination
- 2014–2015 MIT EECS - Google Research and Innovation Scholar
- 2013–2016 USTFCCCA All-Academic Honoree in Cross Country, Track
- 2015 Outside Lands Hackathon (Outside Hacks) Winner

Publications

Peer-Reviewed Papers

Benjamin Xie, Matthew J. Davidson, Min Li, and Andrew J. Ko. An Item Response Theory Evaluation of a Language-Independent CS1 Knowledge Assessment. In *Proceedings of the 2019 ACM SIGCSE Technical Symposium on Computer Science Education*, SIGCSE '19. ACM, 2 2019. Research Track.

Harrison Kwik, Benjamin Xie, and Andrew J. Ko. Experiences of Computer Science Transfer Students. In *Proceedings of the 2018 ACM Conference on International Computing Education Research*, ICER '18. ACM, 2018.

Benjamin Xie, Greg L Nelson, and Andrew J. Ko. An Explicit Strategy to Scaffold Novice Program Tracing. In *Proceedings of the 2018 ACM SIGCSE Technical Symposium on Computer Science Education*, SIGCSE '18. ACM, 2 2018. Research Track.

Greg L. Nelson, Benjamin Xie, and Andrew J. Ko. Comprehension First: Evaluating a Novel Pedagogy and Tutoring System for Program Tracing in CS1. In *Proceedings of the 2017 ACM Conference on International Computing Education Research*, ICER '17, pages 2–11. ACM, 2017.

Benjamin Xie and Hal Abelson. Skill Progression in MIT App Inventor. In *IEEE Symposium on Visual Languages and Human Centric Computing (VLHCC)*, VLHCC 2016, 9 2016.

Benjamin Xie, Isra Shabir, and Hal Abelson. Measuring the Usability and Capability of App Inventor to Create Mobile Applications. In *Proceedings of the 3rd International Workshop on Programming for Mobile and Touch*, PROMOTO 2015, 10 2015.

Posters

Benjamin Xie and Hieke Keuning. NAP Tutor: Scaffolding to support reading code, 7 2017. Carnegie Mellon University LearnLab Summer School. Pittsburgh, PA.

Benjamin Xie. Progression of Computational Thinking Skills Demonstrated by App Inventor Users, 6 2016. MIT App Inventor Summit. Cambridge, MA.

Benjamin Xie. Errors and Debugging of Blocks Based Programming in App Inventor, 12 2014. SuperUROP Fall Poster Session. Cambridge, MA.

Benjamin Xie. Logging and Analyzing the Usage Patterns of Blockly Blocks in App Inventor, 7 2014. MIT App Inventor Summit. Cambridge, MA.

Book Contributions

Andrew J. Ko. *Cooperative Software Development*. 2017.
faculty.washington.edu/ajko/books/cooperative-software-development/.

Talks

Invited Talks

Benjamin Xie. How We Develop Skills by Making Apps, 5 2016. MIT Internet Policy Research Initiative (IPRI) All-Hands Meeting. Cambridge, MA.

Benjamin Xie. Demonstration of MIT App Inventor, 10 2015. 3rd International Workshop on Programming for Mobile and Touch (PROMOTO 2015). Pittsburgh, PA.

Benjamin Xie. Measuring the Usability and Capability of App Inventor to Create Mobile Applications, 9 2015. CharlesRiverX Colloquium. Cambridge, MA.

Benjamin Xie. Apples to Apple: Making Machine Learning Make Sense, 10 2014. 6.UAT Conference for High School Students. Cambridge, MA.

Workshops

Benjamin Xie. How do I get it to save? Persistent Data in App Inventor, 06 2016. 2016 MIT App Inventor Summit. Slides: goo.gl/G3wbhx.

Panels

Benjamin Xie. MIT CS Visit Day, 01 2015. Q&A panel for underrepresented high school students interested in computer science. <http://web.mit.edu/cs-visit-day/>.

Teaching

Instructor

Fall 2017 Introduction to Data Science (UW INFO 370). 34 undergraduates. 3.8/5.0

Teaching Assistant

Spring 2017 Cooperative Software Design (UW INFO 461). 32 undergraduates. 4.8/5.0

Fa 14, Sp 15 Introductory Computer Science (Prospect Hill Academy, Cambridge MA). ≈30 high school students.

Service

Reviewer

2018– ACM Conference on Human Factors in Computing (CHI)

2018– ACM Technical Symposium on Computer Science Education (SIGCSE)

2018 Journal of Information and Learning Sciences

Program Committee

2014–2015 MIT EECS Undergraduate Research Conference (EECScon)

Service to Graduate Education

2018 UW DUB PhD Student Retreat Coordinator

- 2018 UW Information School PhD Retreat Coordinator
- 2016 Google Summer of Code Mentor (on behalf of MIT Media Lab)
[Service to K-12 Education](#)
- 2016– Educational Counselor. Massachusetts Institute of Technology
- 2016– Mentor, Senior Judge. Technology Access Foundation (TAF) Academy STEM Expos
[Service to Community](#)
- 2017– Director of Learning Co-op, Planning Committee Member. Seattle Data for Good
- 2017 Volunteer. Seattle Street Youth Ministries

Students Supervised

Masters

- 2016 Abhijit Suresh, CU Boulder via Google Summer of Code. First position: Ph.D. at CU
- 2016 Sylvan Tsai, MIT. First position: Amazon

Undergraduate

- 2018 William Kwok, UW
- 2018 Harshitha Akkaraju, UW
- 2016-2018 Harrison Kwik, UW
- 2017 Alex Hui Tan, UW. First position: Hazel Analytics
- 2017 Leanne Hwa, UW. First position: Deloitte
- 2015–2016 Xinyue Deng, MIT. First position: Master's at MIT EECS