

Benjamin Xie

Ph.D. Student

Updated: June 2018

The Information School
University of Washington
bxie@UW.edu
benjxie.com

Research Interests

I am a mixed-initiatives HCI researcher that builds equitable learning technologies to teach computing. My vision is to computationally model how people learn programming to develop personalized online learning experiences where the learner is in control. My interests span *human-computer interaction (mixed-initiative interactions)*, *artificial intelligence (model interpretability)*, *computing education*, *intelligent tutoring systems*, and *program synthesis*.

Education

- University of Washington, Seattle, WA** 9/2016-
Ph.D. in Information Science
Code & Cognition Lab
Advisor: Andrew Ko
- Massachusetts Institute of Technology, Cambridge, MA** 9/2015-6/2016
Master of Engineering in Electrical Engineering and Computer Science
Master's Thesis: *Progression of Computational Thinking Skills Demonstrated by App Inventor Users*, Advisor: Hal Abelson
- Massachusetts Institute of Technology, Cambridge, MA** 9/2011-6/2015
Bachelor of Science in Computer Science & Engineering

Professional Experience

- University of Washington, Seattle, WA** 9/2016-
RESEARCH ASSISTANT - The Information School (Code & Cognition Lab)
Developing computational models and online tools that enable self-guided learners to develop computing competencies.
Current projects: Intelligent tutor to teach introductory computer science using a negotiated pedagogical model; improving novice programmers' code tracing strategies.
Advisor: Andrew Ko
- Massachusetts Institute of Technology, Cambridge, MA** 1/2014-5/2016
RESEARCH ASSISTANT - MIT App Inventor (Center for Mobile Learning)
Master's and undergraduate research on analyzing user data to model, understand, and improve learning experiences of web tool that teaches app development
Advisor: Hal Abelson
- NovoEd, San Francisco, CA** 6/2015-8/2015
SOFTWARE ENGINEERING INTERN - Wrote automated tests and trending algorithm for social online learning environment
- AppNexus, New York, NY** 6/2014-8/2014
SOFTWARE ENGINEERING INTERN - Created system to integrate and streamline log data
- eBay, San Jose, CA** 6/2013-8/2013
SOFTWARE ENGINEERING INTERN - Performed large scale data analysis on cross-platform usage and behavior on marketplace
- Massachusetts Institute of Technology, Cambridge, MA** 5/2012-1/2013
RESEARCH ASSISTANT - MIT Teacher Education Program - Prototyped and tested learning resources for location-based augmented reality game, improved web-based game authoring tool. Advisors: Lisa Stump, Judith Perry

Awards & Honors

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

Funding

National Science Foundation Graduate Research Fellowship (NSF GRFP)	9/2015-6/2021
Research Assistantship with MIT App Inventor (MIT Center for Mobile Learning)	9/2015-5/2016
MIT SuperUROP Program	9/2014-5/2015

Publications

Peer-Reviewed Papers

1. Kwik, H., B. Xie, and A. J. Ko (2018). "Experiences of Computer Science Transfer Students". In: *Proceedings of the 2018 ACM Conference on International Computing Education Research*. ICER 18. ACM.
2. Xie, B., G. L. Nelson, and A. J. Ko (2018). "An Explicit Strategy to Scaffold Novice Program Tracing". In: *Proceedings of the 2018 ACM SIGCSE Technical Symposium on Computer Science Education*. SIGCSE 18. Research Track. ACM.
3. Nelson, G. L., B. Xie, and A. J. Ko (2017). "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. ACM, 211. <http://doi.acm.org/10.1145/3105726.3106178>.
4. Xie, B. and H. Abelson (2016). Skill Progression in MIT App Inventor. In: *IEEE Symposium on Visual Languages and Human Centric Computing (VLHCC)*. VLHCC 2016.
5. Xie, B., I. Shabir, and H. Abelson (2015). 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.

Posters

1. Xie, B. and H. Keuning (2017). *NAP Tutor: Scaffolding to support reading code*. Carnegie Mellon University LearnLab Summer School. Pittsburgh, PA.
2. Xie, B. (2016). *Progression of Computational Thinking Skills Demonstrated by App Inventor Users*. MIT App Inventor Summit. Cambridge, MA.
3. Xie, B. (2014). *Errors and Debugging of Blocks Based Programming in App Inventor*. SuperUROP Fall Poster Session. Cambridge, MA.
4. Xie, B. (2014). *Logging and Analyzing the Usage Patterns of Blockly Blocks in App Inventor*. MIT App Inventor Summit. Cambridge, MA.

Talks

1. Xie, B. (2016). *How We Develop Skills by Making Apps*. MIT Internet Policy Research Initiative All Hands Meeting. Cambridge, MA.
2. Xie, B. (2015). *Demonstration of MIT App Inventor*. 3rd International Workshop on Programming for Mobile and Touch (PROMOTO 2015). Pittsburgh, PA.
3. Xie, B. (2015). *Measuring the Usability and Capability of App Inventor to Create Mobile Applications*. CharlesRiverX Colloquium. Cambridge, MA.

- Xie, B. (2014). *Apples to Apple: Making Machine Learning Make Sense*. 6.UAT Conference for High School Students. Cambridge, MA.

Workshops

- Xie, B. (2016). "How do I get it to save?" *Persistent Data in App Inventor*. 2016 MIT App Inventor Summit. Slides: goo.gl/G3wbhx.

Panels

- Xie, B. (2015). *MIT CS-visit-day*. Q&A panel for underrepresented high school students interested in computer science. <http://web.mit.edu/cs-visit-day/>.

Book Contributions

- Ko, A. J. (2017). *Cooperative Software Development*. <https://faculty.washington.edu/ajko/books/cooperative-software-development/>.

Teaching

Instructor

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

Teaching Assistant

- UW INFO 461 - Cooperative Software Design (Spring 2017). 32 undergraduates, 4.8/5.0
- Prospect Hill Academy - Introductory Computer Science (Fall 2014, Spring 2015)

Affiliations

- Association for Computing Machinery (ACM) SIGCSE, SIGCHI, SIGAI 2016-
- International Artificial Intelligence in Education Society (IAIED), 2017-
- International Educational Data Mining Society (IEDMS), 2014-
- Society of Learning Analytics Research (SOLAR), 2016-
- Institute of Electrical and Electronics Engineers (IEEE), 2016-

Service

To Profession

- Reviewer - *SIGCSE* 2018, *SIGCHI* 2018
- Mentor - *Google Summer of Code (MIT Media Lab)* 2016
- Program Committee - *EECScon (MIT EECS Undergraduate Research Conference)* 2014, 2015

To K-12 Education

- Educational Counselor - *Massachusetts Institute of Technology*, 2016-
- Mentor, Senior Judge - *Technology Access Foundation (TAF) Academy STEM Expos*, 2016-
- Coach - *Math Counts (Rolling Hills Middle School)*, 2009-11

To Community

- Head of Education Co-Op, Leadership Committee Member - *Seattle Data for Good*, 2017-
- Volunteer - *Seattle Street Youth Ministries*, 2017

Students Supervised

Masters

- Abhijit Suresh, CU Boulder via Google Summer of Code - first position: PhD student at CU
- Sylvan Tsai, MIT - first position: Amazon

Undergraduate

- Alex Tan, UW - first position: Hazel Analytics, Inc.
- Leanne Hwa, UW - first position: Deloitte
- Harrison Kwik, UW - first position: Master's student at UW CSE
- Xinyue Deng, MIT - first position: Master's student at MIT EECS