Lauren Milne

https://milnel2@github.io/ lmilne@macalester.edu

Education

University of Washington 2012-2018

- PhD Computer Science and Engineering, Advisor: Richard Ladner
- Masters awarded 2014
- PhD awarded June 2018
- Cumulative GPA 3.94/4.0
- **Awards/Fellowships:** NSF Graduate Research Fellow (2014-2017), UW College of Engineering Fellowship 2013-2014, CSE Jeff Bezos First Year Fellowship 2012-2013, Boeing Fellow in Engineering 2012-2013

Carleton College 2004-2008

- Bachelor of Arts, magna cum laude, Physics Major with distinction.
- Cumulative GPA 3.86/4.0, Physics GPA: 4.0/4.0
- **Awards/Scholarships:** Carleton Distinguished Scholar 2005-2008, Dean's List 2004-2008, Member Sigma Xi, Phi Beta Kappa, National Merit Finalist

Publications

Conference and Journal Papers

- Lauren R. Milne, Richard E. Ladner. 2018. Blocks4All: Overcoming Accessibility Barriers to Blocks Programming for Children with Visual Impairments. In *Proceedings of the ACM Conference on Human Factors in Computing Systems* (CHI '18). ACM, New York, NY, USA.
- Annuska Zolyomi, Anne Ross, Arpita Bhattacharya, Lauren R. Milne and Sean Munson. 2018. Values, Identity, and Social Translucence: Neurodiverse Student Teams in Higher Education. In *Proceedings of the ACM Conference on Human Factors in Computing Systems* (CHI '18). ACM, New York, NY, USA.
- Catherine M. Baker, Lauren R. Milne, Ryan Drapeau, Jeffrey Scofield, Cynthia L. Bennett, and Richard E. Ladner. 2016. Tactile Graphics with a Voice. In *ACM Transactions on Accessible Computing. 8, 1 Article 3* (January 2016). ACM, New York, NY, USA.
- Kyle Rector, Lauren R. Milne, Richard E. Ladner, Batya Friedman, Julie A. Kientz. 2015. Exploring the Opportunities and Challenges with Exercise Technologies for People who are Blind or Low-Vision. In *Proceedings of the 16th International ACM SIGACCESS Conference on Computers and Accessibility* (ASSETS '15). ACM, New York, NY, USA.
- Catherine M. Baker, Lauren R. Milne, and Richard E. Ladner. 2015. StructJumper: A Tool to Help Blind Programmers Navigate and Understand the Structure of Code. In *Proceedings of the ACM Conference on Human Factors in Computing Systems* (CHI '15). ACM, New York, NY, USA.
- Lauren R. Milne, Cynthia L. Bennett, Shiri Azenkot, and Richard E. Ladner. 2014. BraillePlay: Educational Smartphone Games for Blind Children. In *Proceedings of the 16th International ACM SIGACCESS Conference on Computers and Accessibility* (ASSETS '14). ACM, New York, NY, USA.
- *Best Student Paper:* Catherine M. Baker, Lauren R. Milne, Jeffrey Scofield, Cynthia L. Bennett, and Richard E. Ladner. 2014. Tactile Graphics with a Voice: Using QR Codes to Access Text in Tactile Graphics. In *Proceedings of the 16th International ACM SIGACCESS Conference on Computers and Accessibility* (ASSETS '14). ACM, New York, NY, USA.

- Lauren R. Milne, Cynthia L. Bennett, and Richard E. Ladner. 2014. The Accessibility of Mobile Health Sensors for Blind Users. In *29th Annual International & Persons with Disabilities Conference* (CSUN '14).

Conference Posters (with Short Papers) and Workshops

- Lauren R. Milne, Catherine M. Baker, Richard E. Ladner. 2017. Blocks4All Demonstration: a Blocks-Based Programming Environment for Blind Children. In *Proceedings of the 19th International ACM SIGACCESS Conference on Computers and Accessibility* (ASSETS '17). ACM, New York, NY, USA. (to appear)
- Annuska Zolyomi, Anne Ross, Arpita Bhattacharya, Lauren R. Milne and Sean Munson. 2017. Value Sensitive Design for Neurodiverse Teams in Higher Education. In *Proceedings of the 19th International ACM SIGACCESS Conference on Computers and Accessibility* (ASSETS '17). ACM, New York, NY, USA. (to appear)
- Lauren R. Milne. 2017. Blocks4All: Making Block Programming Languages Accessible for Blind Children. *SIGACCESS Access. Comput.* 117 (February 2017), 26-29.
- Catherine M. Baker, Lauren R. Milne, Jeffrey Scofield, Cynthia L. Bennett, and Richard E. Ladner. 2014. Tactile Graphics with a Voice Demonstration. In *Proceedings of the 16th International ACM SIGACCESS Conference on Computers and Accessibility* (ASSETS '14). ACM, New York, NY, USA.
- Lauren R. Milne, Cynthia L. Bennett, and Richard E. Ladner. 2013. VBGhost: a Braille-Based Educational Smartphone Game for Children. In *Proceedings of the 15th International ACM SIGACCESS Conference on Computers and Accessibility* (ASSETS '13). ACM, New York, NY, USA, Article 75.

Invited Talks

- Blocks4All: Making Block Programming Languages Accessible for Blind Children. Presentation at the Pacific Northwest AER Conference (March 2017).
- Blocks4All: Making Block Programming Languages Accessible for Blind Children. Presentation at the SIGCSE Pre Symposium Session (March 2017).
- Making K-12 Computer Science Accessible for Students with Disabilities. 2016. Presentation at Google Accessibility Week (October 2016).
- Tactile Graphics with a Voice. Presentation at the Pacific Northwest AER Conference (March 2015).
- Projects in Mobile Accessibility. Summer Academy for Advancing Deaf and Hard of Hearing in Computing (June 2015).

Teaching and Mentoring Experience

COMP-123: Core Concepts of Computer Science — Fall 2018

- **Instructor of Record** for 2 sections of the course with approximately 25 students in each section

CSE490D: Introduction to Accessible Technology Teaching Assistant, UW — Fall 2017

- Developed and graded assignments for capstone preparation class.

CS 252: Algorithms Instructor, Carleton College — Winter 2016

- **Instructor of Record** for a 9-week course with 36 students.
- Developed lectures, homework, and exams, graded tests, supervised a TA, led office hours.

CS 111: Introduction to CS Instructor, Carleton College — Winter 2016

- **Instructor of Record** for a 9-week course with 34 students.
- Developed lectures, homework, and exams, graded tests and final projects, supervised TA, led office hours.

CSE 373: Data Structures and Algorithms Instructor, University of Washington — Summer 2015

- **Instructor of Record** for a 9-week course with 80 students.
- Led lectures, supervised 5 TAs and graded, wrote exams and homework.

CSE 440: Introduction to Human Computer Interaction Teaching Assistant, UW — Fall 2015

- Taught Friday sessions and helped groups develop HCI projects.
- Graded final exams and group projects and led office hours.

CSE 333: Systems Programming Teaching Assistant, University of Washington — Summer 2014

- Taught class-wide sessions and answered questions in office hours.
- Helped develop midterm and final exams and graded exercises and tests.

Saturday Computing Experience Instructor, University of Washington — Summer 2013

- Taught Deaf and hard of hearing high school students programming using Processing in 10-week class.
- Led classes and exercises and worked one-on-one with the students.

Mad Science Instructor — 2011-2012

- Taught science enrichment after-school programs and gave science presentations at elementary school assemblies and educational fairs and festivals.

Physics Tutor and Lab Assistant, Carleton College — 2007-2008

- Taught both class-wide sessions and gave individual tutoring sessions for physics classes (Computational Mechanics, Electricity and Magnetism).
- Helped students with lab exercises (Electricity and Magnetism) and graded (various math and physics courses).

Undergraduate Students Mentored

- Boruli Li: Project; Pedestrian Wayfinding using Glass (2014-2016).
- Ryan Drapeau: Project: Tactile Graphics with a Voice using Glass (2014-2016).
- Aric Hunter: Project: BraillePlay Games for iOS (Summer 2013).

Computer Science Research Experience

Blocks4All: Accessible Block Programming Environments, University of Washington — 2016-2018

- Maded block-based programming environments accessible for blind children. Worked with blind children and Teachers of the Visually Impaired (TVI)s to create an accessible iOS version of a blocks-based programming environment.

V-Braille: Vibrating Braille for the Smartphone, University of Washington — 2012-2014

- Developed accessible games for Android smartphones using vibrating Braille to teach Braille concepts.
- Ran a formative user study with 8 blind children and instrumented versions of the applications to measure use and performance.
- Android and iOS versions of the applications available at: http://vbraille.cs.washington.edu/
- Wrote code using Objective C and C++ in Xcode IDE and Java using Eclipse IDE, code stored in Subversion repository, data analysis done in R.

ScopeJumper, University of Washington 2013-2015

- Developed Eclipse plug-in to help blind developers quickly navigate code using nesting tree structure of control flow statements.
- Wrote plug-in using Java in Eclipse, data analysis done in R and evaluated in a study with blind users.

Tactile Graphics with a Voice, University of Washington 2012-2013

- Worked on both iOS and Android applications that provide audio feedback to help blind people scan QR codes that replace text on tactile graphics.
- Ran a longitudinal user study with 10 blind and low-vision users to determine how effective different types of non-vision feedback were and how they compared with Braille text on the graphics.
- Developed artificial intelligence algorithm to automatically place QR codes on the graphics.
- Wrote code using Objective C and C++ in Xcode, code stored in Subversion repository, data analysis done in R.

Physics Research Experience

Molecular Electronics Research, Cornell University 2007

- Used dielectrophoresis to create single electron electrodes. Used electron microscopy to examine electrodes.

Materials Science Research, Carleton College 2006-2007

- Research assistant in condensed matter physics lab.
- Programmed with LabView to make resistance measurements on Colossal MagnetoResistant (CMR) thin films while steadily decreasing temperature in a vacuum.

Volunteer Experience and Outreach

Computer Science Outreach and Service 2014-2017

- ***Design for America Chapter Founder:*** Helped found community at the University of Washington that focuses on collaborating with community partners to design for social change.
- ***Dawg Bytes Programming Camp*:** Worked with elementary and middle school students learning programming using the Quorum Language in a week-long camp.
- ***Husky Adapt Toy Hack:*** Took part in hacking event to make electronic toys more accessible for children with motor impairments at the University of Washington.
- ***Undergraduate Tutoring:*** Tutored students in Introduction to Computer Science and Algorithms courses with weekly meetings at the University of Washington.
- ***NCWIT Awards for Aspirations****:* Presented my research at event that recognizes high school girls who are passionate about computer science.
- ***Empowering Blind Students in Science & Engineering****:* Volunteered at 2-day workshop to match blind high school and college students interested in science and engineering with mentors.
- ***Paws on Science****:* Volunteered at University of Washington event to get children excited about science.
- ***Rat City RollerGirls Website Design:*** Helped with front-end development of the Rat City RollerGirls website.
- ***Peer Reviewer:*** ACM CHI, Conference on Human Factors in Computing, ACM MobileHCI, Conference on Mobile Human Computer Interaction, ACM SIGCSE, Conference on Computer Science Education

Personal Care Attendant, Lifeworks 2008-2012

- Planned daily activities for non-verbal young man with Angelman Syndrome. Facilitated communication and socialization with others.

Community Technology Tutor, Minnesota Literacy, St. Paul, MN 2011-2012

- Worked with ESL and low-income adult learners to master basic computer skills.

Interests

Computer Science

I am interested in Human Computer Interaction (HCI), especially accessibility. I am passionate about creating technology to bridge communication and information boundaries for people with disabilities. I am excited about the potential for smart devices (phones and tablets) to help with accessibility, especially in education.

Outside of Computer Science

Triathlons, photography, running, hiking, biking, skijoring and roller derby (formerly a captain of the Rat City RollerGirls All-start team.)