Rebecca Krosnick

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Summary

- Experienced researcher, builder, and designer
- **Expert on human-computer interaction**, programming tools, end-user programming, user interface automation
- 10+ years of experience building user interfaces with JavaScript, HTML, and CSS
- 6+ years of experience identifying user needs, designing and prototyping potential solutions, and evaluating them

Education

University of Michigan   **Ann Arbor, MI**
PhD in Computer Science and Engineering   *November 2023*

- Research Interests: Human-Computer Interaction, End-User Programming
- Selected Coursework: Social Computing Systems, Natural Language Processing, Database Systems
- Advisor: Steve Oney

Massachusetts Institute of Technology   **Cambridge, MA**
Master of Engineering in Electrical Engineering and Computer Science   *September 2015*

- Thesis: VideoDoc: Combining Videos and Lecture Notes for a Better Learning Experience
- Advisor: Robert C. Miller

Bachelor of Science in Computer Science and Engineering   *June 2014*

- Selected Coursework: User Interface Design, Artificial Intelligence, Software Construction, Computer Graphics

Work Experience

University of Michigan   **Ann Arbor, MI**
Graduate Student Researcher   *September 2017 – Present*

- **Developed novel programming-by-demonstration approaches** (see demo) that enable users to create custom web automation and scraping macros without writing code – users instead **specify desired behavior naturally** (e.g., direct manipulation, natural language, examples); the system **infers generalized automation using AI heuristics**.
- Studied the challenges and needs of programmers writing web automation scripts and developed novel IDE interactions to integrate the target website UI with code and provide feedback on CSS selectors (see demo)
- Developed a novel programming-by-example approach (see demo) that allows users to create responsive website layouts without writing code, but instead through direct manipulation and by providing visual examples; the system then uses interpolation to infer generalized layout rules

Apple   **Seattle, WA**
Research Intern – AI/ML Division   *May 2022 – September 2022*

- Developed a new approach for collecting mobile phone screenshots and labels to train machine learning models to predict user interface elements and their attributes
- Implemented a data engineering pipeline in Python which spawns compute jobs to launch iPhone apps, capture screenshots and metadata, and process and deliver data into the necessary format for training a machine learning model
- Gathered representative data samples and worked with our data annotation team to generate labels

Microsoft Research   **Remote**
Research Intern – Extended Perception, Interaction & Cognition Team   *May 2021 – August 2021*

- Developed a prototype for exploring novel cross-device interactions

Autodesk Research   **Toronto, ON**
Research Intern – User Interface Research Team   *May 2019 – August 2019*

- Designed an approach to help knowledge workers capture their knowledge, processes, and design intents while they are working on the computer, to serve as future documentation or learning material
- Implemented this approach as a web app that encourages users to think aloud while they work, and captures and presents transcribed user speech alongside screen recordings and other software metadata

The MathWorks, Inc.   **Natick, MA**
Software Engineer   *September 2016 – July 2017*

- Developed file directory UI features for MATLAB and MATLAB Online using JavaScript, Dojo, and Java

Application Support Engineer   *August 2015 – September 2016*

- Participated in software projects throughout the company as part of a rotational program for recent graduates
- Provided technical support to customers and served as the Group Leader for my technical support team, managing open cases and assisting other team members with technical and procedural questions

Microsoft Corporation   **Redmond, WA**
Software Development Engineer Summer Intern   *June 2014 – August 2014*

Awards

University of Michigan CSE Fellowship, Ann Arbor, MI. 2017.

Selected Publications

1. J Wu, **R Krosnick**, E Schoop, A Swearngin, JP Bigham, J Nichols. Never-ending Learning of User Interfaces. *ACM Symposium on User Interface Software and Technology (UIST)*. 2023.

2. **R Krosnick**, S Oney. ParamMacros: Creating UI Automation Leveraging End-User Natural Language Parameterization. *IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC)*. 2022.

3. **R Krosnick**, S Oney. Understanding the Challenges and Needs of Programmers Writing Web Automation Scripts. *IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC)*. 2021.

4. **R Krosnick**, F Anderson, J Matejka, S Oney, WS Lasecki, T Grossman, G Fitzmaurice. Think-Aloud Computing: Supporting Rich and Low-Effort Knowledge Capture. *ACM Conference on Human Factors in Computing Systems (CHI)*. 2021.

5. S Oney, **R Krosnick**, J Brandt, B Myers. Implementing Multi-Touch Gestures with Touch Groups and Cross Events. *ACM Conference on Human Factors in Computing Systems (CHI)*. 2019. **Honorable Mention**.

6. SW Lee, **R Krosnick**, SY Park, B Keelean, S Vaidya, SD O'Keefe, WS Lasecki. Exploring Real-Time Collaboration in Crowd-Powered Systems Through a UI Design Tool. *ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW)*. 2018.

7. S Oney, A Lundgard **R Krosnick**, M Nebeling, WS Lasecki. Arboretum and Arbility: Improving Web Accessibility Through a Shared Browsing Architecture. *ACM Symposium on User Interface Software and Technology (UIST)*. 2018.

8. **R Krosnick**, SW Lee, WS Lasecki, S Oney. Expresso: Building Responsive Interfaces with Keyframes. *IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC)*. 2018.

9. R Singh, R Singh, Z Xu, **R Krosnick**, A Solar-Lezama. Modular Synthesis of Sketches Using Models. *International Conference on Verification, Model Checking and Abstract Interpretation (VMCAI)*. 2014.

See Google Scholar for full list: https://scholar.google.com/citations?user=bw4sQA0AAAAJ&hl=en&oi=ao

Skills

Proficient in: React, JavaScript, HTML, CSS, Node.js, Express.js, Electron, MongoDB, Git, jQuery
Familiar with: TypeScript, Python, Next.js, Puppeteer, Vercel, Webpack, Dojo, Java, C#, C++, Swift, MATLAB, SQL
UX and Research: rapid prototyping, user-centered design, mockups, usability studies, thematic analysis

Academic Service

Publicity and Social Media Chair | *IEEE Symposium on Visual Languages and Human-Centric Computing*   **2023**
Reviewer for Conference Papers   **2018 − Present**
- Reviewed paper, poster, and workshop submissions for a variety of human-computer interaction conferences, including: CHI, UIST, VL/HCC, CSCW, TOCHI, C&C, DIS, IUI.
- 5x Outstanding reviewer

Teaching Experience

University of Michigan, CSE   **Ann Arbor, MI**
Graduate Student Instructor - User Interface Development   *January 2020 – April 2020*
- Acted as head TA for a class of 250 students, overseeing undergraduate TA staff and organizing logistics for discussion sections, office hours, and grading
- Answered student questions and explained JavaScript concepts through office hours and online forum Piazza
- Developed JavaScript homework assignments and provided feedback to lecturers on lecture and exam material

Graduate Student Instructor - Human-AI Interaction   *September 2019 – December 2019*
- Graded homework assignments, created mini-quizzes, and took notes for this graduate seminar class

Massachusetts Institute of Technology, EECS   **Cambridge, MA**
Teaching Assistant - Software Studio   *September 2014 – December 2014*
- Led recitations, mentored student project teams, held office hours, graded assignments, helped with course logistics

Lab Assistant - Software Construction   *September 2013 – Dec 2013*
- Assisted students with Java and problem sets during office hours, code-reviewed student work, graded assignments

Lab Assistant - Introduction to Python   *January 2012 Intersession*
- Circulated around the lab to answer questions and held office hours

Lab Assistant - Mathematics for Computer Science   *September – December 2011*
- Assisted students during in-class problem solving sessions

Outreach and Mentoring

- Mentor for MIT Undergraduate Practice Opportunities Program (UPOP). Sept 2020–April 2022
- UMich Girls Encoded - Middle School CS Outreach Program. April 2018 – March 2019.
- UMich "Lunch and Lab with a Grad" Mentoring Program. Oct 2017, 2018.
- Hour of Code. 2016, 2017.