

# RICHARD LI

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## OVERVIEW

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I use skills in embedded systems, artificial intelligence, and human-computer interaction to create new interaction techniques and solve problems in healthcare and accessibility.

## EDUCATION

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### University of Washington

2019.09 - Present

#### **Ph.D. in Computer Science & Engineering**

*Advisors:* James Fogarty & Shwetak Patel

Working on sensing and machine learning for interactive health applications.

### Georgia Institute of Technology

2018.08 - 2019.05

#### **Ph.D. in Computer Science**

*Advisors:* Gregory Abowd & Thad Starner

*Concentration:* Ubiquitous computing and machine learning

Worked on sensing and machine learning for wearable interaction and health tracking.

2016.08 - 2018.05

#### **M.S. in Computer Science**

*Advisors:* Gregory Abowd & Thad Starner

*Concentration:* Interactive Artificial Intelligence

Worked on sensing and machine learning for wearable interaction and health tracking.

2012.08 - 2016.05

#### **B.S. in Computer Science**

*Concentration:* Artificial Intelligence and Devices

Minored in music performance (clarinet).

# INDUSTRY EXPERIENCE

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2021.06 - 2021.09

## **Microsoft Research**

Research Intern @ EPIC Group

*Advisors:* Eyal Ofek, Ken Hinckley, Nicolai Marquardt

Worked on multi-device interactions.

2020.06 - 2020.09

## **Microsoft Research**

Research Intern @ Ability Group

*Advisors:* Ed Cutrell & Alex Fiannaca

Worked on audio augmented reality.

2019.05 - 2020.06

## **X, the Moonshot Factory (formerly Google [X])**

Research Intern (full-time), Research Scholar (part-time)

*Advisors:* JB Berent & Yash Ahluwalia

Work undisclosed.

2018.05 - 2019.05

## **Google Research & Machine Intelligence**

Research Intern (full-time), Research Scholar (part-time) @ Sound Understanding Group

*Advisors:* Dimitri Kanevsky, Thad Starner, Dick Lyon

Explored sensing and machine learning techniques for accessible wearable interactions, published [7].

2017.05 - 2017.08

## **Nvidia Research**

Research Intern @ Future Experiences Group

*Advisors:* Kaan Aksit

Developed a gaze-tracking system for VR headsets, published [11].

2015.05 - 2015.08

## **Amazon.com**

Software Engineering Intern @ Product & Service Discovery Team

*Advisors:* Jerrin Elanjikal

Built and launched a web app for finding protection plans.

2014.05 - 2014.08

## **Intel**

Research and Development Intern @ Data Center Group

Developed a bare-metal provisioning cloud computing module.

2013.05 - 2013.08

## **Broadcom**

Software Configuration Management Intern

Created automation scripts for optimizing developer efficiency.

# PEER-REVIEWED PUBLICATIONS

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**2021**

- [16] **Augmented Silkscreen: Designing AR Interactions for Debugging Printed Circuit Boards**  
*Designing Interactive Systems Conference 2021*  
Ishan Chatterjee, Olga Khvan, Tadeusz Pforte, **Richard Li**, Shwetak Patel
- [15] **Understanding the Design Space of Mouth Microgestures**  
*Designing Interactive Systems Conference 2021*  
Victor Chen, Xuhai Xu, **Richard Li**, Yuanchun Shi, Shwetak Patel, Yuntao Wang
- [14] **Mobile, Hands-free, Silent Speech Texting Using SilentSpeller**  
*Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems*  
Naoki Kimura, Tan Gemicioglu, Jonathan Womack, **Richard Li**, Yuhui Zhao, Abdelkareem Bedri, Alex Olwal, Jun Rekimoto, Thad Starner

**2020**

- [13] **Evaluating a novel, portable, self-administered device (“flicker-app”) that measures critical flicker frequency as a test for hepatic encephalopathy in patients with cirrhosis**  
*The Liver Meeting Digital Experience™*  
Philip Vutien, Ravi Karkar, **Richard Li**, Kara Walter, Sean Munson, James Fogarty, George Ioannou
- [12] **A Real-Time Eating Detection System for Capturing Eating Moments and Triggering Ecological Momentary Assessments to Obtain Further Context: System Development and Validation Study**  
*JMIR mHealth and uHealth*  
Mehrab Bin Morshed, Samruddhi Shreeram Kulkarni, **Richard Li**, Koustuv Saha, Leah Galante Roper, Lama Nachman, Hong Lu, Lucia Mirabella, Sanjeev Srivastava, Munmun De Choudhury
- [11] **Optical gaze tracking with spatially-sparse single-pixel detectors**  
*2020 IEEE International Symposium on Mixed and Augmented Reality (ISMAR)*  
**Richard Li**, Eric Whitmire, Michael Stengel, Ben Boudaoud, Jan Kautz, David Luebke, Shwetak Patel, Kaan Akşit
- [10] **Kissglass: Greeting gesture recognition using smart glasses**  
*Proceedings of the Augmented Humans International Conference*

**Richard Li**, Juyoung Lee, Woontack Woo, Thad Starner

**2019**

- [9] **Prediction of mood instability with passive sensing**  
*Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies*  
Mehrab Bin Morshed, Koustuv Saha, **Richard Li**, Sidney K D'Mello, Munmun De Choudhury, Gregory D Abowd, Thomas Plötz
- [8] **ScratchThat: Supporting Command-Agnostic Speech Repair in Voice-Driven Assistants**  
*Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies*  
Jason Wu, Karan Ahuja, **Richard Li**, Victor Chen, Jeffrey Bigham
- [7] **TongueBoard: An oral interface for subtle input**  
*Proceedings of the 10th Augmented Human International Conference 2019*  
**Richard Li**, Jason Wu, Thad Starner

**2018**

- [6] **ScratchVR: low-cost, calibration-free sensing for tactile input on mobile virtual reality enclosures**  
*Proceedings of the 2018 ACM International Symposium on Wearable Computers*  
**Richard Li**, Victor Chen, Gabriel Reyes, Thad Starner
- [5] **Buccal: Low-cost cheek sensing for inferring continuous jaw motion in mobile virtual reality**  
*Proceedings of the 2018 ACM International Symposium on Wearable Computers*  
**Richard Li** & Gabriel Reyes
- [4] **Wristwash: towards automatic handwashing assessment using a wrist-worn device**  
*Proceedings of the 2018 ACM international symposium on wearable computers*  
Hong Li, Shishir Chawla, **Richard Li**, Sumeet Jain, Gregory D Abowd, Thad Starner, Cheng Zhang, Thomas Plötz

**2017**

- [3] **EarBit: Using Wearable Sensors to Detect Eating Episodes in Unconstrained Environments**  
*Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies*

Abdelkareem Bedri, **Richard Li**, Malcolm Haynes, Raj Prateek Kosaraju, Ishaan Grover, Temiloluwa Prioleau, Min Yan Beh, Mayank Goel, Thad Starner, Gregory Abowd

**2016**

- [2] **Tactile Teacher: Enhancing Traditional Piano Lessons with Tactile Instructions**

*19th ACM Conference on Computer Supported Cooperative Work and Social Computing Companion*

**Richard Li**, Yingyan Wang, Chih-Pin Hsiao, Nicholas Davis, James Hallam, Ellen Yi-Luen Do

**2015**

- [1] **Tactile teacher: Sensing finger tapping in piano playing**

*Proceedings of the Ninth International Conference on Tangible, Embedded, and Embodied Interaction*

Chih-Pin Hsiao, **Richard Li**, Xinyan Yan, Ellen Yi-Luen Do

## SERVICE AND OUTREACH

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### Reviewer

*ISWC* (2017, 2018, 2020, 2021); *CHI* (2019, 2020, 2021); *IMWUT* (2019, 2021); *ISMAR* (2020); *Health Psychology* (2021); *ICC AffectiveSense* (2021); *UIST* (2021)

### Student Volunteer

*Ubicomp*: 2019; London, UK

### UW CSE PhD Pre-Application Review Service

2020

### GT Senior Capstone Design Expo Judge

2016.04, 2016.11, 2017.04, 2017.12, 2018.12

## MENTORSHIP

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2021.09 - Present

### Toma Itagaki

Explored brain-computer interfaces.

2021.09 - Present

### Zage Phillips

Explored brain-computer interfaces.

2020.08 - 2021.03

### Millicent Li

*Undergrad Thesis, NSF GRFP Honorable Mention*

Now: Microsoft Research Intern, Facebook AI Resident, PhD @ Northeastern

Explored brain-computer interfaces for sensing language processes.

2020.01 - Present

**Annalice Ni**

*Undergrad Thesis*

Explored fabrication and sensing techniques for upcycling cardboard into interactive elements.

2020.01 - Present

**Eddy Zhou**

Explored fabrication and sensing techniques for upcycling cardboard into interactive elements.

2017.09 - 2019.09

**Victor Chen**

Now: Masters @ Stanford, Software Engineer @ Zoom

Developed hand-driven input techniques for low-cost VR, published [6, 8, 15].

2018.01 - 2019.05

**Sophia Sun**

*Undergrad Thesis*

Now: Software Engineer @ Yelp, PhD @ University of Minnesota

Created a face-tracking system for facilitating human-to-human interactions through low-cost VR.

2018.01 - 2019.05

**Ruihan Xu**

*Undergrad Thesis*

Now: Software Engineer @ Google

Created a face-tracking system for facilitating human-to-human interactions through low-cost VR.

## TEACHING

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2021.09 - Present

**Ubiquitous Computing Seminar (CSE590u @ UW)**

*Instructor*

Led a weekly seminar presentation and discussion on breaking-edge research.

2020.01 - 2021.03

**Introduction to Human-Computer Interaction (CSE440 @ UW)**

*Teaching Assistant*

Led two weekly recitations, graded assignments, and facilitated lecture activities.

2015.01 - 2016.05

**Georgia Tech Technical Interview Prep (GT TIP)**

*Co-Founder & Instructor*

Developed course curriculum, weekly lecture materials, and activities.

2014.08 - 2014.12

**Introduction to Computer Science (CS1100 @ GT)**

## *Teaching Assistant*

Presented weekly lectures on opportunities for computer science majors.

## **AWARDS**

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- 2019.01 **Siemens Futuremaker Fellowship**
- 2017.11 **Runner-up Master Thesis**  
*Three Minute Thesis Competition*
- 2017.04 **Outstanding Master's Research Award**  
*Georgia Tech College of Computing*
- 2017.02 **Best Computing Poster Award**  
*Carrer, Research and Innovation Development Conferrence (CRIDC)*
- 2015.02 **Travel Grant to CSCW 2016**  
*Georgia Tech GVU Center*
- 2015.01, 2015.08 **President's Undergraduate Research Award (PURA)**  
*Undergraduate Research Opportunities Program (UROP)*
- 2014.08 - 2016.05 **HOPE Scholarship**  
*Georgia Tech Office of Scholarships and Financial Aid*

## **LEADERSHIP**

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- 2017.04 - 2017.12 **Peer Leader**  
*Georgia Tech Grad Groups*  
Helped 15 first year students transition into graduate school.
- 2014.01 - 2016.05 **Co-Founder and Tech Team Lead**  
*HackGT*  
Organized the largest hackaton in the South and led outreach activities.
- 2015.01 - 2015.03 **Organizing Committee Member**  
*Foot Wearables Workshop @ National University of Singapore (NUS)*  
Collaborated with NUS students on developing foot wearables.

## **EXTRACURRICULARS**

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### **Music**

Clarinet and saxophone.

**Outdoors**

Running, biking, and hiking.