

MAKEABILITY LAB

Our Lab

We design, build, and evaluate interactive tools and techniques to address pressing societal challenges in accessibility, sustainability, education, and beyond.

makeabilitylab.cs.uw.edu



Lab Members



Jon E. Froehlich
Associate Professor



Xia Su
2nd Year PhD



Michael Duan
Undergrad



Palbir Minhas
Undergrad



Katrina Ma
Master's



Mikey Saugstad
Research Scientist



Chu Li
1st Year PhD



Sho Miami
Undergrad



Logan Milandin
Undergrad



Yueqian Zhang
Master's



Daniel Campos Zamora
2nd year Ph.D.



Jaewook Lee
1st year Ph.D.



Zoe Kaputa
Undergrad



Connor Espig
Undergrad

What We Are Working On



Accessibility



Fabrication



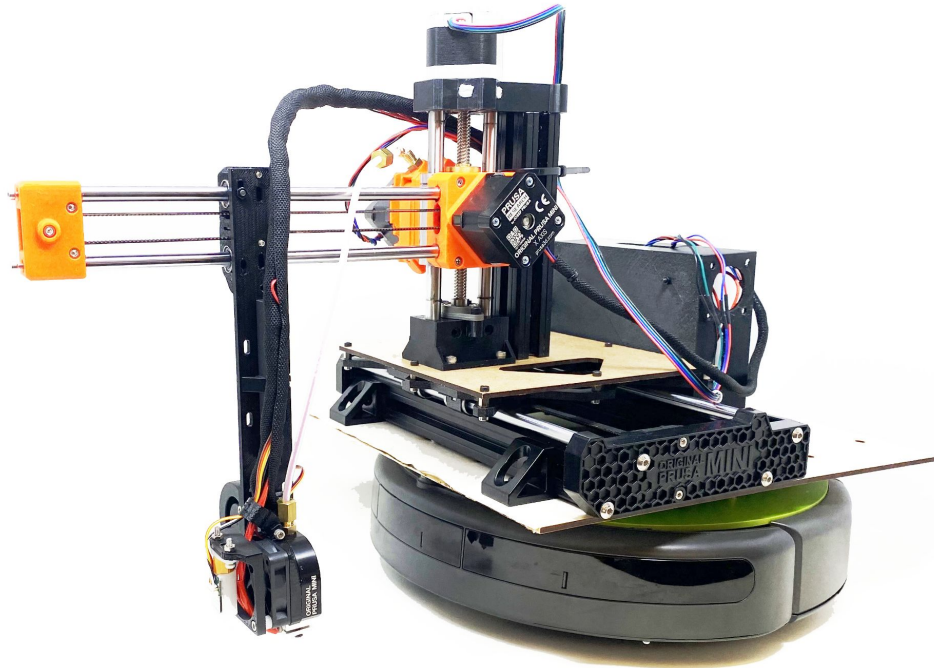
Augmented Reality



Current Projects

sPrintr

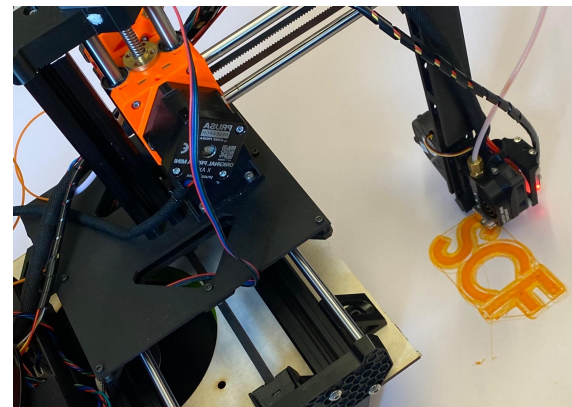
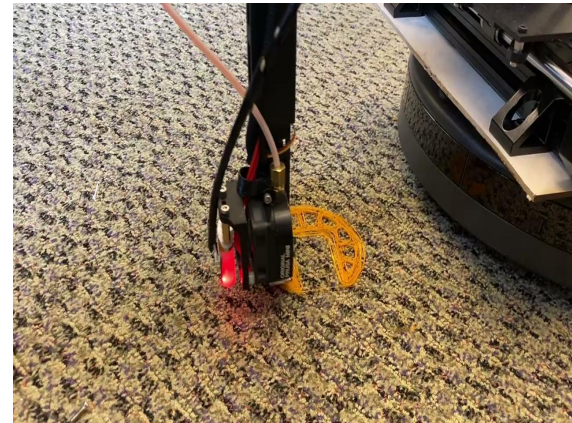
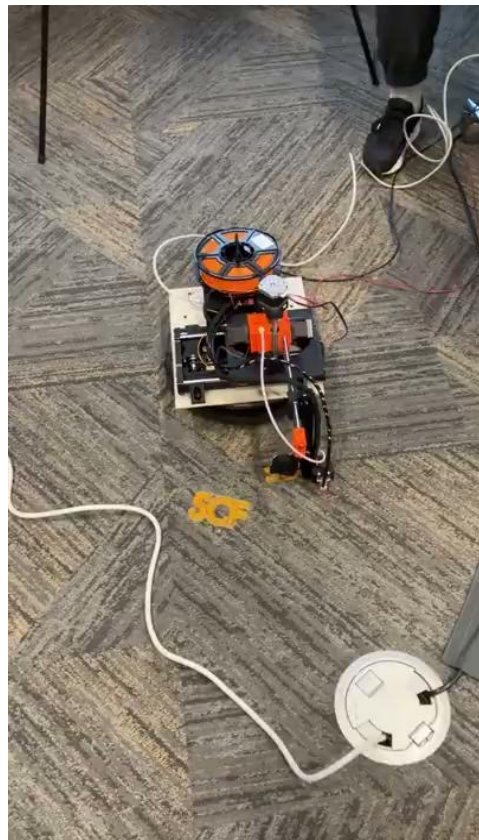
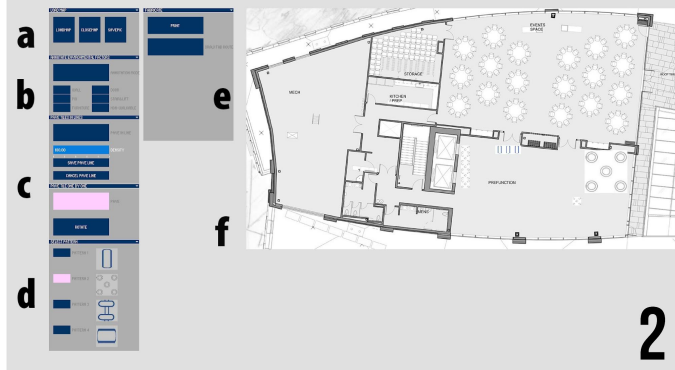
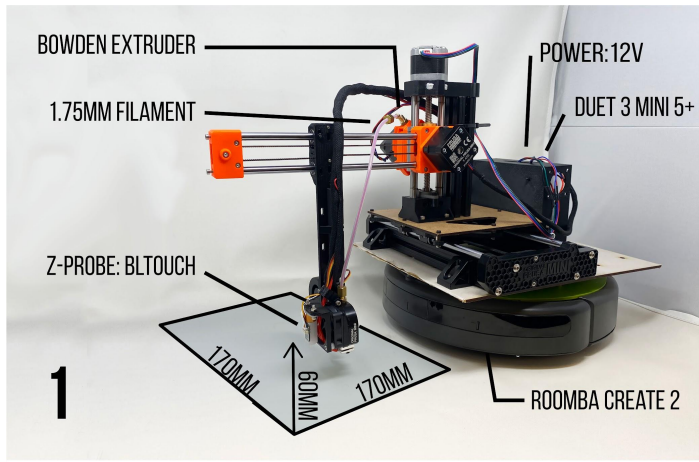
A Mobile 3D Printer and Design Pipeline



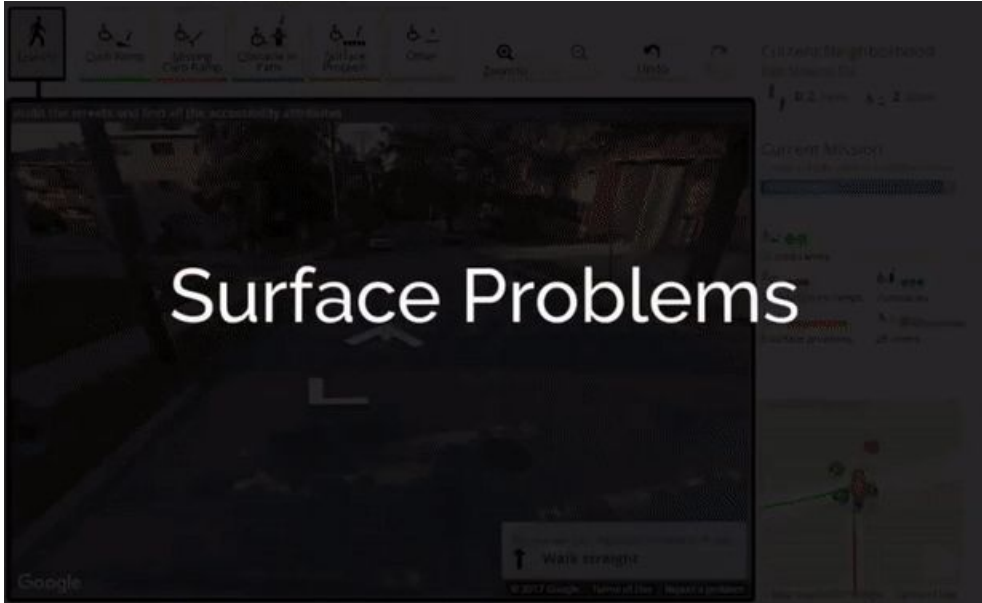
Motivation. To adapt physical environments for accessibility and customization

Research Questions. How can mobile fabrication expand access to accessible infrastructure? How can we design software that complements new mobile hardware to make an integrated workflow?

Summary. An integrated pipeline that allows for the in-situ design and fabrication of objects to adapt the environment to their individual needs.



Project Sidewalk

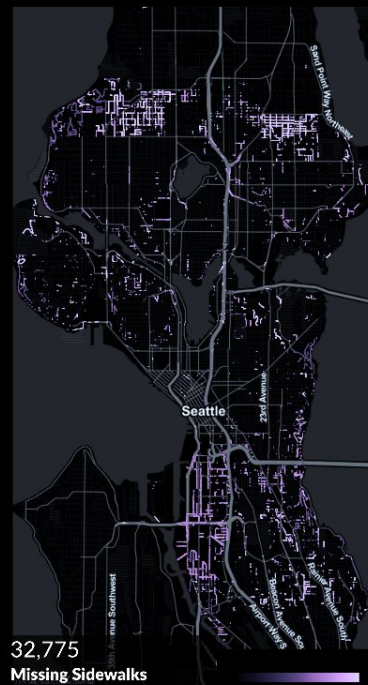
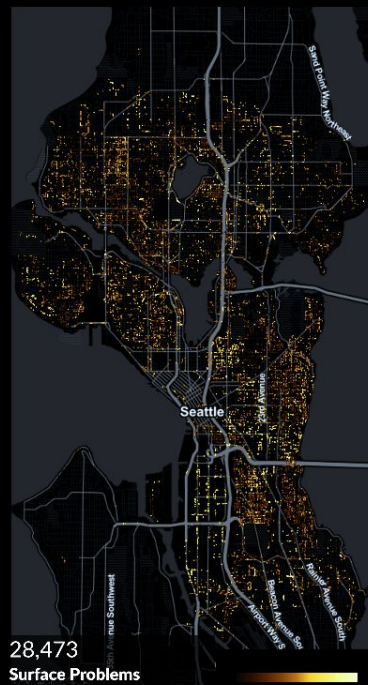
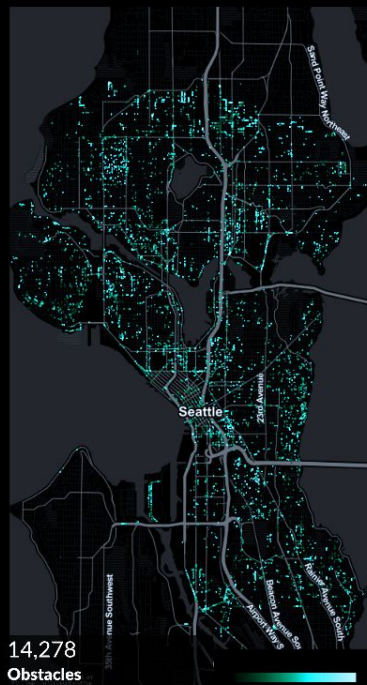
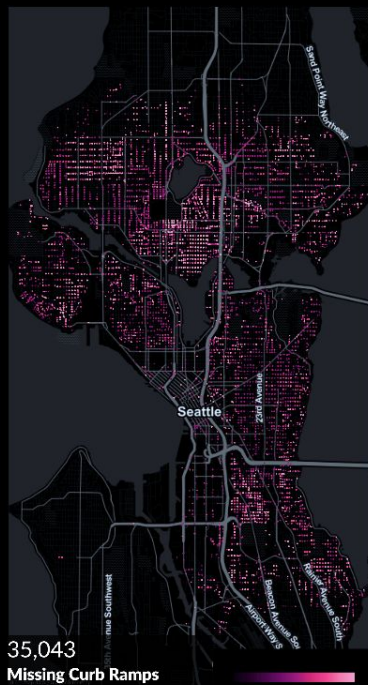
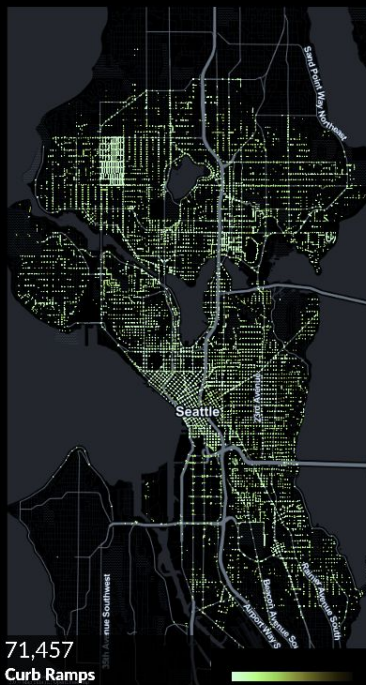


How can we map and assess the accessibility of every sidewalk in the world using remote crowdsourcing and machine learning?

Large, ongoing research project: over 12 cities including Chicago, Seattle, Pittsburgh, Zurich, Amsterdam, and Mexico city

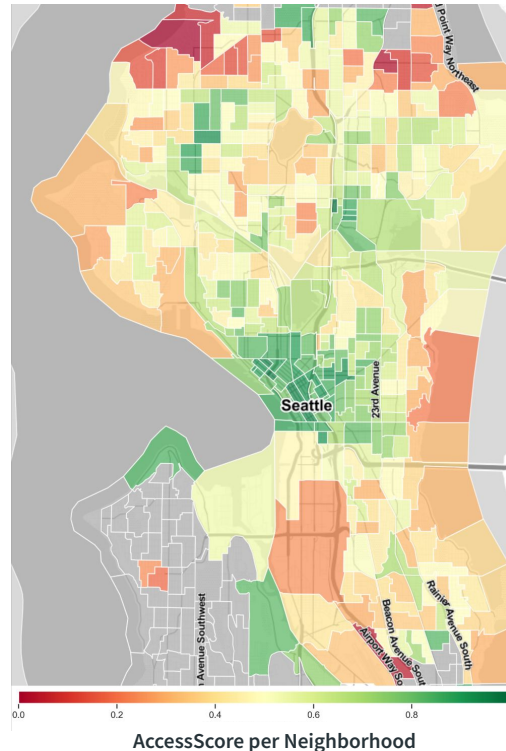
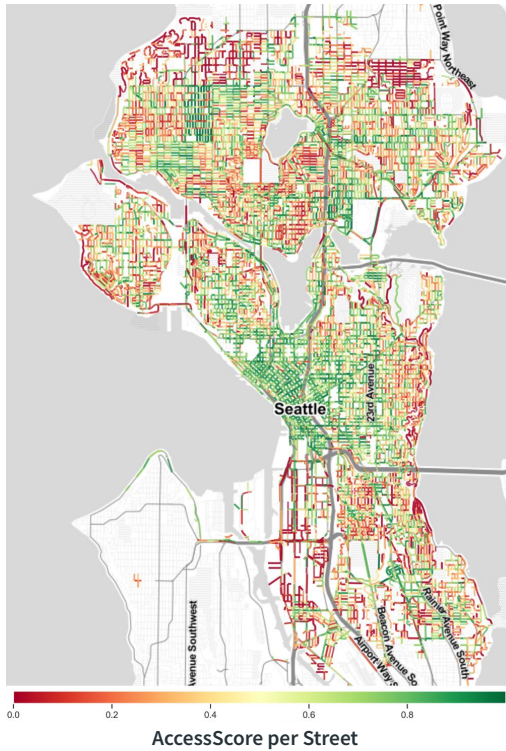
Over 1 million labels+validations collected

Project Sidewalk in Seattle



Sidewalk Equity

A Pilot Study in Seattle Using
Crowdsourced Sidewalk Assessment Data



Motivation. In light of sidewalks' importance as infrastructure, there has been growing interest in sidewalk-related disparities

Research Questions. How might we use crowdsourced sidewalk assessment data to examine sidewalk condition patterns in a city? How do sidewalk quality scores relate to neighborhood socioeconomic characteristics?

Summary. Crowdsourced sidewalk assessment data has the potential to be used for large-scale, cross-regional studies of sidewalk infrastructure, human mobility, and social equity.

RASSAR

Hello! This App scans home environment and detects potential accessibility and safety issues in the scanned space.

Please first specify your accessibility needs, then press the button to start scan.

Please select one community
Blind or Low Vision People
Children

Start Scanning

RASSAR

A semi-automatic tool that help people conduct indoor accessibility auditing

Motivation: Safe and accessible home space is a fundamental human right. However, most people live in pre-existing spaces, which requires careful auditing and renovations to improve safety and accessibility. We want to help the general public improve indoor accessibility.

Research Questions: How can we enable easy indoor access/safety auditing with mobile devices. What are the key access/safety issues we can detect with indoor sensing. How to effectively guide people to detect and solve indoor access/safety issues.

Summary: A phone app that detects and locates access/safety issues in Augmented Reality, and provide fixing suggestions to user.

AR Navigation

An AR glasses platform for displaying accessible paths and validating labels in Project Sidewalk.



Motivation. With the expansion of sidewalk accessibility datasets, we need to design a navigation system that makes use of available data.

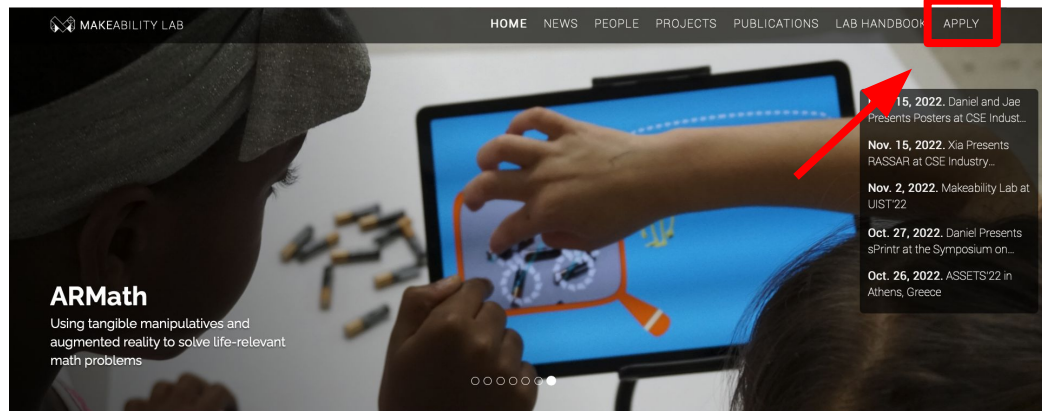
Research Questions. How can we suggest personalized routes to each individual with varying motor abilities? How can we validate inaccuracies in sidewalk datasets?

Summary. We aim to design an AR navigation system on the Hololens 2 that shows personalized paths and enables users to input whether a particular accessibility issue still exists or not.

How you can get involved

We are always looking for motivated, creative, and hard-working students to join ongoing research.

If you are interested, please visit our website and [apply online](https://makeabilitylab.cs.washington.edu/apply).



<https://makeabilitylab.cs.washington.edu/>

