

# Frank Liu

I am a Ph.D. Student at Arizona State University, advised by Robert Likamwa in the Meteor Studio. I am interested in enhancing human computer interaction experiences through mixed reality and machine learning, advancing education and encouraging overall health and wellness. I enjoy working on projects that incorporate my diverse skillset in signal processing, physical prototyping, machine learning and human-computer interaction.

PhD Candidate  
Electrical, Computer &  
Energy Engineering  
Arizona State University  
Tempe, AZ  
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## EDUCATION

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<b>PhD</b> 2018 - Present	Computer Engineering, Arizona State University Advisor: Robert Likamwa
<b>BS</b> 2014 - 2018	Electrical Engineering, University of Washington Advisor: Hanchuan Li, Shwetak Patel
Summer 2016	University of California, Berkeley Courses taken: Python and Big Data, Biostatistics

## HONORS & AWARDS

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Dean's Fellowship, Arizona State University  
- Awarded to top 4% of admitted graduate students with significant leadership and research capabilities  
Ira A. Fulton Fellowship, Arizona State University  
Herbold Foundation Fellowship, Arizona State University  
  
Priscilla and Melvin Wilson Endowed Scholar, University of Washington  
Electrical Engineering Departmental Honors  
IEEE HKN Honors Society, University of Washington  
- Scholastic achievement in the top 30% of graduating class

## PEER-REVIEWED PUBLICATIONS

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P4     *Coordinate: A spreadsheet-programmable augmented reality framework for immersive map-based visualizations*  
Aashiq Shaikh, Linda Nguyen, Alireza Bahremand, Hannah Bartolomea, **Frank Liu**, Van Nguyen, Derrick Anderson and Robert Likamwa. Special  
Special Session Paper: International Conference on Artificial Intelligence & Virtual Reality (AIVR '19), San Diego, California

- p3 *SoberComm: Exploring the Feasibility of Facilitating Alcohol Dependent Patients to Improve Family Communication using Mobile Phones*  
Chuang-Wen You, Hung-Yeh Lin, Yaliang Chuang, Yi-Ching Huang, Jui-Ting Tsai, Shan Jean Wu, Chia-Hua Kuo, Ming-Chyi Huang, **Frank Wencheng Liu**, Jane Yung-Jen Hsu, Hui-Ching Wu.  
ACM Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT) September 2019
- P2 *SWISH: A shifting-weight interface of simulated hydrodynamics for haptic perception of virtual fluid vessels*  
Shahabedin Sagheb, **Frank Wencheng Liu**, Alireza Bahremand, Assegid Kidane, Robert Likamwa  
ACM UIST 2019, New Orleans, Louisiana
- P1 *A Spatial Audio System for the Internet-of-Things*  
**Frank Liu**, Robert Likamwa  
Demo: Hotmobile 2019, Santa Cruz, California  
Awarded: NSF Student Travel Grant

## INTERNSHIP EXPERIENCE

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Summer 2019	Clobotics, Bellevue, Washington Computer Vision and Machine Learning Research Intern. Shipped an end to end price tag decoding system for price and barcode reading for both android and GCP Created and labeled US retail price tag dataset for training and testing
Summer 2018	National Taiwan University - IoX Center, Gongguan, Taiwan Research Intern. Mentor: Professor Bing You Award of Excellence: Significant contributions in shipping android application SoberComm, allows alcohol dependent individuals and their family members to monitor alcohol usage
Spring 2018	Roxy Device, Seattle, Washington Startup Intern. Lead generation and public outreach for customer acquisition. Built, assembled, and QA tested Roxy Device hardware systems.
Winter 2018	Microsoft, Redmond, Washington Consultant. Created labs, lessons and course content for the "Introduction to Device Programming" EDX (MICROSOFT COURSE) [DEV295X] using Microsoft's IOT Pack for Raspberry Pi for audience of thousand+ students
Spring 2017	Verizon Wireless, Bellevue, Washington Systems Performance Intern. Supported Systems Performance/Radio Frequency engineers in evaluating and improving areas of poor coverage using internal SP / RF tools

## TEACHING EXPERIENCE

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Arizona State University	Fall 2019: Teaching Assistant for AME 494, "Musical Microprocessors" Spring 2019: Teaching Assistant for AME 394, "Introduction to Mixed Reality"
University of Washington	Fall 2016, Spring 2017, Spring 2018: Grader and Teaching Assistant for EE215, "Introduction to Circuits"
Coding with Kids	Spring 2017, Classroom Instructor Taught coding course curriculum for scratch at local elementary schools.

## SERVICE

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Volunteer	TEI 2019
Mentor	Summer 2019, Advanced Robotics at the University of Washington Summer 2019, Hacklodge Seattle
Member	Fall 2017 – Spring 2018, The College of Engineering Student Advisory Council Interviewed students and faculty about mental health on campus and prepared a recommendation report

## INVITED TALKS

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Scholar-Donor Recognition 2018	From my exemplary leadership and service on campus, I was personally invited by Michael Bragg, Dean of the College of Engineering, as a speaker for the 2017-2018 Scholar-Donor Recognition Luncheon.
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## LEADERSHIP

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TedXASU Organizing Team Spring 2019	Event with 1000+ tickets sold. Advised the development for the TedxASU application on android and iOS. Assisted in speaker selection, providing insights to the rest of the organizing team. Served in full capacity for event setup and takedown
Sunhacks Organizing Team Fall 2018	Lead marketing campaigns selling out tickets for 300+ participants Organized the largest hackathon in Phoenix Area; Sunhacks, ASU's 36-hour hackathon
Advanced Robotics at the University of Washington Spring 2017 – Summer 2018	Annotated meetings and weekly sprints coordinating 90 members Raised over 18,000 in funding through philanthropy efforts and sponsorships Refiller Robot Lead; Designed and conducted CAD reviews; wrote embedded software (C, C++, Arduino) for robot control systems Summer 2018 Placed 3rd in International Regionals  Summer 2017 Placed 31st out of 241 at International DJI Robomasters competition in Shenzhen, China

## SELECTED PRESS

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Sunhacks	<b>State Press.</b> Sunhacks provides an inclusive outlet for ASU students
Advanced Robotics at the University of Washington	<b>UW Daily.</b> Robotics team breaking down obstacles... literally <b>Seattle Times.</b> These attack robots and their UW creators will take on the world at RoboMaster competition in China <b>Seattle Times.</b> UW students and their attack robots hit bumps in China — then a hotel hair dryer saved the day <b>Bloomberg.</b> China's High-Stakes Robot Wars

## REFERENCES

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Robert Likamwa	likamwa@asu.edu
Shwetak Patel	shwetak@cs.washington.edu