

# ALIREZA BAHREMAND

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(<https://github.com/TheWiselyBearded>)

## EDUCATION

**ARIZONA STATE UNIVERSITY** BS SOFTWARE ENGINEERING, 2018, **GPA 3.67/4.0**  
PhD COMPUTER ENGINEERING, 2023

## SKILLS

**LANGUAGES** C, C#, C++, Java, Javascript, Prolog, Python

**FRAMEWORKS & LIBRARIES** ARCore, ARKit, AVRdude, Electron, Leap Motion, .NET, NVIDIA FLEX, React, SteamVR, Vue, Vuforia, Windows Mixed Reality Toolkit

**TECHNICAL SKILLS & TOOLS** Adobe Illustrator & Photoshop, Augmented Reality, Arduino, Bash, Blender, Bluetooth Comm., Git, LaTeX, Node, Raspberry Pi, REST API, SQL, UML Design, Unity3D, Unreal Engine, Virtual Reality, Visual Studio, Xcode

## EXPERIENCE

### XR SOFTWARE ENGINEER • NASA • (2019)

- Creating VR training simulations for the International Space Station.
- Documenting long-term business plans for MSFC to develop with future interns/employees.
- Developing XR frameworks for visualizing & interacting with complex CAD files in VR using Unity3D before fabrication.
- Developing maintainable, extensible XR software frameworks to reduce cost & time for documenting training simulations.

### RESEARCH ASSISTANT • METEOR STUDIO, ASU • (2017 - PRESENT)

- **Research Direction:** Energy-efficient hybridization of digital-to-physical environments with perceptual senses such as sight, smell, & touch.
- Project Manager for VR Spectroscopy Data Viz application & AR application for visualizing geographic CSV data via server/client communication.
- Co-author & developer for 2 XR publications: SWISH\* (framework for proprioceptive feedback) & GLEAM (illumination estimation framework).
- SCRUM Master for STAR (Storytelling in AR), framework for streaming object interactions between AR headsets & smartphones at 60FPS.

### VICE PRESIDENT • TEDxASU • (2018 - 2019)

- Recruited, interviewed, & lead a team to build out an Android & iOS mobile application using Unity 3D & Vuforia.
- Lead a team of developers & designers to create the TEDx website with Materialize, AWS, & Wix.
- Assisted in interviewing/recruitment of 20+ students, 8 speakers, & securing ASU Gammage Theater as venue for largest TEDxASU event.

### UNDERGRADUATE TEACHING ASSISTANT • ASU • (2016 - 2017)

- Wrote in-class assessments using LaTeX for 10 units of *SER334: Operating Systems & Networks*.
- Lead online discussion forums for troubleshooting assignments in *SER250: Microarchitecture & Computer Architecture*.

### AT-HOME-ADVISOR • APPLE • (2015 - 2016)

- Learned how to communicate with customers for difficult technical matters solely through vocal communication.
- Assisted & troubleshooted customer problems with all Apple Products & services (Mac's, iPhones, iCloud, iMovie, etc).

### TECHNICIAN • TALK N' FIX • (2015)

- Diagnosed and repaired/replaced hardware issues with all mobile devices and tablets.
- Trained employees to fix iPhones, Samsung Galaxies, and iPad tablets.

## PROJECTS

### ORBITAL PLANETARY DATA VISUALIZATION • AR | VR | DESKTOP • (2018 - 2019)

- Developed azimuthal compass indicator, custom textures/sprites, map grid views, and data parsing using StreamReaders.
- Created VR & AR interface for regional-based visualization along with custom gesture/button mapped controls for data interaction.

### SWISH\* • AR | EMBEDDED • (2018 - 2019)

- Developed a software algorithm to translate cartesian coordinates into cylindrical motor steps & transmit via Bluetooth to Arduino Mega 2560.
- Created a VR user study environment that provides a questionnaire that reads/writes from text file.

### STAR (STORYTELLING IN AUGMENTED REALITY) • AR | WEB • (2017 - 2018)

- Developed, *with team*, a custom web API to stream multi-input, live, AR user interaction(s) with virtual objects using JSON communication.
- Worked on Unity integration of multiple API's (*Mixed Reality Toolkit, ARKit, Socket.IO, Google Poly Toolkit*) on multiple platforms (*iOS, HoloLens*).

### AHJ PROGRAMMING LANGUAGE • LANGUAGE DESIGN • (2017 - 2018)

- A shell script uses bash commands & Prolog scripts to perform lexical analysis, parsing, & intermediate code execution.
- Designed then developed scripts for recursively parsing language tokens, executing commands, & storing variables in memory stack.

### GARDEN SENSOR DATA VISUALIZATION • EMBEDDED | WEB • (2017)

- Developed synchronous analog sensor readings via I2C communication on ATmega168 for parsed serial communication.
- Ran Raspberry Pi as local server, read ATmega168 file report with Python script, then rendered a web page (*using Materialize*) with extracted data.

## ACHIEVEMENTS & EXTRACURRICULAR ACTIVITIES

### AWARDS

- *Convocational Speaker Faculty Nomination*
- *TEDxASU 2018 Speaker*
- *ACM MobiSys - Best Demo Runner Up*
- *2nd Degree Black Belt AMA*
- *First Place PayPal Opportunity Hackathon*
- *Blowers Scholarship*
- *First Place AZ Desert Hackathon*
- *University Graduate Fellowship Award*
- *University Engineering Fellowship*

### ACTIVITIES

- *TEDxASU Executive Board Vice President*
- *ASU Computer Science Club President*
- *SunHacks Hackathon Mentor & Organizer*
- *SISE HS Unity 3D Programming Tutor*

### COMMUNITY SERVICE

- *AME Summer Coding Camp TA*
- *Phoenix Zoo Voluntary Ranger*
- *PayPal Opportunity Hack Developer*
- *Hackathon Mentor*

\* Generating Light Estimations Across Mixed Reality Devices

\* Shifting Weight-Based Interfaces For Simulated Hydrodynamics In Mixed Reality Fluid Vessels

# CURRICULUM VITAE – ALIREZA BAHREMAND

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## PERSONAL INFORMATION

Alireza Bahremand  
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## EDUCATION

**Ph.D. Computer Engineering** *Arizona State University*  
Advised by Dr. Robert LiKamWa, 2019-current

**B.S. Software Engineering** *Arizona State University*  
Graduated May 2018

## PUBLICATIONS

Siddhant Prakash, **Alireza Bahremand**, Linda Nguyen, Robert LiKamWa.  
"GLEAM: Global Light Estimation Across Mixed Reality Devices." In Proc.  
ACM MobiSys 2019.

Shahabegin Sagheb, Frank Liu, **Alireza Bahremand** Robert LiKamWa. "SWISH:  
A shifting-weight interface of simulated hydrodynamics for haptic perception  
of virtual fluid vessels." In Proc. ACM UIST 2019.

Kathryn Powell, **Alireza Bahremand**, Alec Gonzalez, Robert LiKamWa, Chris  
Edwards. "An Integrated Environment for Visualizing In-Situ and Orbital  
Planetary Data." In Proc. LPSC 2019.

## PROFESSIONAL EXPERIENCE

### 2017-Current | Research Assistant, *Meteor Studio, ASU*

- **Research Interests:** Energy efficient hybridization of perceptual senses into spatial computing.
- Currently studying the integration of olfactory sensations for VR environments.
- Co-author for 3 publications involving XR systems & tools.
- Project Manager for development of 2 XR applications/tools contracted by ASU Knowledge Enterprise & targeting NASA.

### Summer 2019 | Software Engineering Intern, *NASA*

- Developed XR frameworks for visualizing & interacting with complex CAD files.
- Created software tool for building & simulating VR training applications using any models or settings.
- Documenting long-term XR business plans for Marshall Space Flight Center.

### 2016 - 2018 | Teaching Assistant, *ASU*

- Wrote in-class assessments using LaTeX for 10 units of SER334: Operating Systems Networks.
- Lead online/in-person office hours for SER250: Microarchitecture Computer Architecture.

TECHNICAL SKILLS **Programming Languages** C#, Python, Java, JavaScript, C++, C, HTML/CSS, L<sup>A</sup>T<sub>E</sub>X

**Software and Frameworks** Adobe Photoshop, Adobe Illustrator, ARKit, ARCore, AWS, Blender, Express, Eclipse, Git, IntelliJ, Microsoft Mixed Reality Toolkit, NodeJS, PostgreSQL, React, SteamVR, Visual Studio, Vue, Unity3D, Unreal Engine, XCode

**Technologies** Augmented Reality, Embedded Systems, Virtual Reality, Web Applications

SPOKEN LANGUAGES **English** (primary).  
**Farsi** (proficient).

EXTRACURRICULARS **Spring 2017 - Present - Hackathon Organizer**  
*sunhacks, Tempe, AZ*  
Served as a Student Mentor helping people learn new technologies ranging from Full Stack Frameworks to Microcontrollers.  
Have given 2 workshops on Unity3D development with XR frameworks.

**Fall 2018 - Spring 2019 - Vice President of TEDxASU**  
*Arizona State University, Mesa, AZ*  
Recruited & interviewed 20+ students for different roles ranging from marketing, communications, engineering, & stage design.  
Lead a team to build out an cross platform Augmented Reality mobile application using Unity 3D & build the TEDxASU website using Materialize, AWS, & Wix.

**Spring 2016 - Fall 2017 - President of the Computer Science Club**  
*Arizona State University, Mesa, AZ*  
Responsibilities included coordinating workshops, guest lectures, & social events for Engineers on the ASU Polytechnic Campus.  
During presidency expanded club to 50 members across 2 campuses.

SCHOLARSHIPS AND AWARDS **2019 - ASU University Graduate Fellowship**  
**2018/19 - ASU University Engineering Fellowship**  
**2019 - Best Demo Runner Up**  
*ACM MobiSys*

**2019 - Student Travel Award**  
*ACM MobiSys*

**2018 - Convocational Speaker Faculty Nomination, ASU**  
**2018 - Blowers Engineering Scholarship**