William Liu

Email: yuxuanliu9518@gmail.com | GitHub: https://github.com/mast0rbill | Portfolio: www.williamliu.dev

Languages: C#, C, C++, Java, Python, Go, JavaScript/TypeScript/JSX, HTML/CSS, Bash

Tools: Unity, Android, Node.js, React, REST, MongoDB, Azure, AWS, Google Cloud, UWP, Linux

EXPERIENCE

Full Stack Developer - SPATIAL SYSTEMS INC. (SAN FRANCISCO) JAN 2020 - PRESENT

- Individually prototyped and shipped Stadia-style streaming service with Unity client in the cloud.
  - **Significantly increased meeting accessibility**, especially for users without AR headsets.
  - Contributed to design & engineering meetings to discuss productization of this feature.
- Developed Spatial's backend API in Go with a MongoDB database.
  - Routed admin endpoints through Auth0 to ensure industry-standard security.
  - Created Go server on AWS to automatically spin up streaming clients upon user join.

Augmented Reality Developer - SPATIAL SYSTEMS INC. (NEW YORK) APR 2019 - SEP 2019

- Ported the entire Spatial app to Oculus Quest with Android Studio & Unity using Java, C++ and C#.
  - Created an Android WebRTC solution in Java, enabling use of screenshare & webcam.
  - Used C++ to facilitate interop between Java and .NET, **speeding up rendering by 500%**.
  - Implemented a native Android browser, enabling live document editing on device.
- Prototyped PDF and PowerPoint-upload systems to display slides in AR.
- Implemented scribble feature on Hololens 2 (UWP), allowing drawing in 3D with hand gestures.
- Developed and presented important features **directly to partners with Spatial CEO**.

PROJECTS

Paxitium - MULTIPLAYER SURVIVAL GAME (UNITY, C#) https://www.indiedb.com/games/paxitium

- Reached **#1 on IndieDB**, attracting international attention of over 100,000 views.
- Implemented scalable, object-oriented designs for large features in Unity and C#.
  - Created an in-depth inventory system with containers, grids, and automatic sorting.
  - Designed and coded an advanced interaction system with 3D UI for in-game objects.
- Developed an authoritative multiplayer system with custom network requests & responses.
  - Set up dedicated servers to handle network traffic and verify data, preventing hacking.
  - Wrote client-side prediction & reconciliation logic to minimize data sent and reduce latency.

#^{3} - MIT REALITY HACK (UNITY, C#, PYTHON, AR) https://devpost.com/software/project-x0bvzw8s654m

- Won the **Best Use of Nreal Prize** for pushing the boundaries of media filtering in AR.
- Developed a REST API in Python with MongoDB in Azure to allow data syncing between clients.
- Implemented image detection to accurately place virtual objects in real life.

SMapS - **MHACKS 12 PROJECT** (ANDROID, JAVA, NODE.JS) https://devpost.com/software/smaps

- Won **Lyft's Best Transportation Prize**, presenting a solution to allow more people access to Maps.
- Translated SMS messages to server web requests, allowing Google Maps access without internet.
  - Created virtual phones on Twilio to act as SMS proxies for backend API.
- Created Node.js backend to handle incoming HTTP requests and invoke Google Maps API.

Machine Learning - AI NEURAL NETWORKS (JAVA) https://github.com/mast0rbill/machine-learning

- Wrote neural networks from scratch to learn if a word comes from English, achieving 91% accuracy.

EDUCATION

University of Waterloo - BACHELOR OF COMPUTER SCIENCE (CANDIDATE) SEP 2018 - APR 2023

- Cumulative Average (as of January 2020): 90%