

# William Liu

Email: [yuxuanliu9518@gmail.com](mailto:yuxuanliu9518@gmail.com) | GitHub: <https://github.com/mastOrbill> | Portfolio: [www.williamliu.dev](http://www.williamliu.dev)

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**Languages:** C#, C, C++, Java, Python, Go, JavaScript, TypeScript, HTML, CSS, SQL

**Tools:** Unity, Android, .NET, Node.js, React.js, REST, GraphQL, MongoDB, AWS, Google Cloud, Linux

## EXPERIENCE

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**Software Engineer Intern - Microsoft Corp.** (C, C++, C#) VANCOUVER (REMOTE), MAY 2021 - SEP 2021

- Online networking engineer at The Coalition (Xbox Game Studio which maintains Gears of War).
  - Implemented binary serialization library in C++ for MessagePack in game engine's network transport layer, achieving up to **5x faster than the official library** for the intended use case.
- Created code generator from scratch to automatically write C++ game SDK from C# web service source, significantly simplifying iteration time and reducing human error.
  - Utilized runtime compiling and reflection to gather & parse endpoint schemas.

**Full Stack Developer - Wish (ContextLogic Inc.)** (PYTHON, REACT, SQL) REMOTE, SEP 2020 - DEC 2020

- Engineered policies to automatically detect & issue penalties for poor merchant customer support.
  - Created intuitive and scalable frontend admin pages in React.js using GraphQL queries.
  - Detected policy infringement in Python with complex SQL queries to retrieve metrics.
- Upgraded & maintained Wish merchant policy backend frameworks **to support Wish IPO**.

**Full Stack Developer - Spatial Systems Inc.** (C#, JSX, GO) SAN FRANCISCO, JAN 2020 - MAY 2020

- **Individually prototyped and shipped Stadia-style streaming service** with Unity client in the cloud.
  - Became the **most popular platform by customer usage**, greatly increasing product reach.
- Developed Spatial's backend API in Go with MongoDB & webapp frontend in React.js.
  - Implemented backend driver to automatically spin up streaming clients at meeting start.

**Augmented Reality Developer - Spatial Systems Inc.** (C#, C++, JAVA) NEW YORK, APR 2019 - SEP 2019

- **Ported the entire Spatial app to Oculus Quest** with Android Studio & Unity using Java, C++ & 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.
- Developed and presented important features **directly to corporate partners with Spatial CEO**.

## PROJECTS

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**Paxitium - Multiplayer Survival Game** (UNITY, C#) <https://www.indiedb.com/games/paxitium>

- Reached **#1 on IndieDB**, attracting international attention of over 100,000 views.
- Designed and implemented scalable, object-oriented features in Unity and C#.
  - Created an in-depth gridlike inventory system with containers synced over the network.
  - Implemented an advanced interaction system with 3D UI for in-game objects.
- Developed an authoritative multiplayer system with a custom packet serialization framework.

**#3 - MIT Reality Hack** (UNITY, C#, PYTHON) <https://devpost.com/software/project-x0bvzw8s654m>

- Won the **Best Use of Nreal Prize** for pushing the boundaries of social media in AR.
- Implemented image detection to accurately place virtual media objects in the real world.

**SMapS - MHacks 12** (ANDROID, JAVA, NODE.JS) <https://devpost.com/software/smapi>

- Won **Lyft's Best Transportation Prize**, presenting a solution to increase the accessibility of Maps.
- Translated SMS messages to server web requests, providing Google Maps access without internet.
- Created Node.js backend to handle incoming HTTP requests and invoke Google Maps API.

## EDUCATION

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**University of Waterloo - Bachelor of Computer Science** (CANDIDATE) SEP 2018 - APR 2023

- Cumulative Average (as of August 2021): 91%