

# ANDREW JIANG



## Summary

- 7 years of experience in **software and hardware development**
- Well-versed in device bringup, driver development, and debugging (GDB, WinDbg)
- Experienced with embedded hardware and DSP solutions (Tensilica Xtensa)
- Proficient in secured and obfuscated computer networking (SSL, Tor, Pluggable Transports)
- Completed masters level courses in security, cryptography, and quantum information

## Languages

- C/C++ • Java • Python • SQL
- Verilog/SystemVerilog • VHDL

## Education

### Bachelor of Applied Science – Honours Computer Engineering

University of Waterloo

(Sep 2015 - Jun 2020)

Dean's Honours List, With Distinction (Average of 90%)

### Exchange Program - Masters Computer Engineering

Delft University of Technology

(Sep 2018 - Jan 2019)

## Research

### Hardware Accelerated Statistical Analysis of NLFSRs

Prof. Mark Aagaard, University of Waterloo

- Designed a digital circuit network that accelerates the analysis of various non-linear feedback shift registers for use as secure pseudorandom number generators

## Experience

### Microsoft Corporation

Software Engineer II - Xbox Multimedia

Aug 2020 - Present

Redmond, WA, USA

- Took ownership of the software stack for dedicated audio hardware in the Xbox Series X|S, using **C/C++** to deliver userspace, driver, and firmware components
- Spearheaded engineering efforts with partners to deliver **80+ secs** of convolution reverb and **hundreds** of dynamic spatial objects in **real-time, at minimal CPU cost**
- Co-developed novel audio processing optimizations, resulting in a **patent filing**

### Microsoft Corporation

Silicon Verification Engineering Intern

Aug 2019 - Present

Sunnyvale, CA, USA

- Employed **SystemVerilog, UVM, and Python** to achieve 100% coverage of a hardware IP block used to characterize the display projection behaviour of the **HoloLens** Mixed Reality system

### NVIDIA Corporation

Autonomous Vehicles Engineering Intern

Feb 2019 - Apr 2019

Holmdel, NJ, USA

- Implemented a new Extract-Transform-Load (**ETL**) pipeline in **C++ and Python** for analyzing datasets used for training and testing the PilotNet neural network-based path perception system, reducing computation time from **tens of hours to minutes**

### NVIDIA Corporation

Camera Systems Software Engineering Intern

May 2018 - Aug 2018

Santa Clara, CA, USA

- Reduced the CPU load of the automotive camera stack by **~10% over 8 cores** via optimizing system calls and context switches between user mode libraries, kernel mode drivers, and embedded firmware, all written in **C/C++**

### Advanced Micro Devices (AMD) Inc.

Display Software Engineering Intern

Aug 2017 - Dec 2017

Markham, ON, Canada

- Optimized the hardware programming sequences in the **C/C++** display driver for Linux & Windows, reducing register programming time by up to **65%**
- Upstreamed and merged 27 commits into the **mainline Linux kernel**

### TunnelBear Inc.

Backend/Android Developer

May 2016 - Apr 2018

Toronto, ON, Canada

- Maintained the VPN traffic obfuscation infrastructure, created a new set of more efficient REST APIs, and overhauled all aspects of the TunnelBear **Android** VPN app

## Projects

### minRISC: Free and Open Platform Security

University of Waterloo Capstone Project

May 2019 – Apr 2020

- RISC-V based SoC that allows applications to run in trusted enclaves, ensuring memory contents are encrypted & authenticated to protect against physical attacks

### The CyanogenMod & OmniROM Projects

Popular third-party aftermarket Android OS distributions

Jun 2012 – May 2016

- Maintained the **kernels, HALs, framework**, and device trees for a variety of mobile devices, providing new versions of Android long after manufacturer support ended