

Education

The University of Chicago BS and MS in CS '18

Machine Learning and Data Analytics // Graphics & Games // Distributed & Parallel Computing

ICPC Regional top 10% // Voices in Your Head A Cappella; ICCA World Finals 3x Top 3

Stuyvesant High School '14 USAJMO // USAPhO // Codeday NYC Co-organizer

Experience

Google Software Engineer **Typescript | Javascript | C++ | Python** 2019 - now

- **XR Data:** Designed and implemented a frame interpolation tool in C++ for recorded video datasets. Set up end-to-end tests using mobly and Python for XR APIs; they were previously all manually tested.
- **Google Labs:** Investigated streaming technologies for VR. Optimized EarthVR shadow caching in Unreal Engine.
- **Stadia Gameplay Team:** Worked on various team projects: frame pacing, metrics collection, game input systems.
 - Led a cross-team initiative to investigate and implement algorithms to measure and assess frame rate stability. These tools were later used to create one of our main Technical Requirements for partners, which I owned.
 - Owned a dev-facing dashboard with a thousand weekly active users. Added in new metrics with C++ and JS.
 - Researched and implemented new mobile gamepad features in Dart.
 - Conducted over 40 technical interviews for incoming SWEs.

Magic Leap Graphics System Engineer **C | C++ | Python** 2018 - 2019

- Created a novel image blend function for our screen capture system to fix text legibility w/o changing look.
- Triageed and resolved bugs in large C++ based systems, including a memory leak that only crashed over hours.
- Gave a team-wide presentation on C++ Templates and its applications in data structures and OOP optimization.

Facebook Payments Risk - SWE Intern **Hack (PHP)** 2017

- Created a new data pipeline for storing features within Facebook's ML-powered payment fraud detection system.
- Designed, researched, and implemented novel data compression algorithms specific to our unique data sources.

Google Skia - Software Engineering Intern **C++ | OpenGL** 2016

- Designed novel modifications to conventional 3D shadow mapping to allow for different types of lighting (3D point, 3D directional, 2D point) in a 2D graphics system, using C++ and OpenGL.
- Wrote comprehensive unit tests to measure performance and correctness.

Projects

A selected set of projects outside of work.

Data Python | scikit-learn | NumPy

- **Author ID:** Identify author of 100-char text snippets; top 20% on a Kaggle competition using statistical methods. Naive Bayes, n-grams, TF-IDF, and SVMs.
- **Weather Modeling:** Mined + cleaned public weather records. Used HMMs to train a weather predictor that self-discovered pressure systems.

Systems Python | C | pthreads | Bash

- **Multi-Paxos:** Implemented a consistent and fault-tolerant distributed key-value store in Python.
- **Parallel Work Queues:** Designed and implemented a system to balance work over multiple threads; used Bash and slurm to test the system.

Games / Graphics C++ | OpenGL | SDL2 | Javascript

- **Terrain Gen:** Used ECS and C++ templates to make a terrain generator. Top-down view with SDL2. Models climate, erosion, moisture, and ray-casted shadows.
- **MusixBox:** A procedural music box. Perlin noise controls for mood, complexity, and other factors, allowing for the music to naturally ebb and flow.

Other / Misc

- **The Chromeatics:** co-founded Google SFO's a cappella group. Led weekly rehearsals and quarterly skill-building workshops. Held various concerts, with audiences ranging from dozens to **hundreds**.