Alexander Shah

Software Engineer

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Languages	Java, C/C++, Python, Scala, JavaScript, HTML, CSS, SQL, MATLAB
Tools / Tech	Git, Bash, PostgreSQL, ReactJS, jQuery, Flask, OpenGL

Experience

SideFX | 3D Software Developer - R&D | C++, MATLAB | *Feb 2018 - May 2018*
- Developed an algorithm for approximate convex decomposition of 3D meshes that uses **iterative graph cuts** and **linear classification** to find **optimal clipping planes**
- Obtained meaningful measures of concavity by using the Geodesics in Heat algorithm to trace paths along 3D meshes

PaveAI | Software Engineer - Full Stack | Python, Javascript, SQL | *May 2017 - Sep 2017*
- Designed an async service with Celery and Redis to distribute tasks across servers
- Replaced key-value store with PostgreSQL JSONB resulting in a **10x speed increase**
- Worked with PostgreSQL, using Alembic for migrations and SQLAlchemy for ORM
- Implemented **Linear Optimization** to extract the most critical data for clients

Projects

Raytracer 🔗 | C++
- Wrote a **photorealistic graphical renderer** that works by simulating light rays
- Implemented reflections, refractions, and translucency for spheres and planes

Slime Farming Simulator 🔗 | Java
- Developed a **multithreaded game server** and client for a rogue-like dungeon crawler
- Incorporated collision detection and double-buffering to reduce screen tearing
- Designed a procedural map generation algorithm and a pathfinding AI

Learnr 🔗 | JavaScript, Python
- Created an education enhancement app for students written in ReactJs and Electron
- **Transcribed YouTube videos** with OpenCV and Tesseract on top of Flask backend
- Collected content with Selenium and summarized using Intellexer

Education

University of Waterloo | *2016 - 2021*
- Candidate for Bachelor of Software Engineering
- Dean's Honour List

Coursera - Stanford University Machine Learning | MATLAB | *2016*
- Implemented Linear & Logistic Regression, ANN, k-NN, and SVM in weekly assignments
- Worked on real world applications such as anomaly detection and recommenders

Awards
- Top 30 Canadian Computing Olympiad Qualifying Round | *Feb 2016*
- Platinum Division USA Computing Olympiad | *Jan 2016*
- DECA International Team Marketing Finalist | *2014 - 2016*