JASPER CALDER

Systems Design Engineering at University of Waterloo
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SKILLS

- Object-Oriented Programming: C/C++ | Python | GoogleTest | Git | Linux | Agile Design
- 3D Modeling and Rendering: OpenGL | WebGL | GLSL | Blender | AutoDesk Fusion 360
- Web Dev: React | Javascript | HTML | CSS | SASS | Node | Express
- Database: SQL | MongoDB | Pandas | JSON | REST APIs | Firebase | Google Cloud
- Hardware: VHDL | Quartus Prime | FPGAs | Soldering and Wiring

WORK EXPERIENCE

SOFTWARE DEVELOPER, ANIMATION AND VFX | Maxon Computer (09/2022) – (12/2022)

- Developed a C++ command line application for artists to package and migrate over 100 Capsules (3D models, textures, etc.) and help unify file formats across all Maxon products (Cinema 4D, Zbrush, etc.) for cloud integration.
- Built informed features that allow the user to add JSON metadata, asset dependencies, parent databases, and prune filtered versions, as well as created thorough unit tests using GoogleTest to ensure long-term code functionality.
- Improved a DLL API wrapper to store dependant asset versions and conform to programming standards outlined in my included Confluence spec documentation.
- Implemented critical team feedback to update and merge Jira code tickets using Git (Bitbucket) versioning software.

SPACE DATA ANALYST | University of Waterloo (01/2022) – (05/2022)

- Automated the calculation and organization of necessary classroom space based on schedule data using Python (Pandas), saving the team a minimum of two hours with every data revision.
- Implemented Python code to automate the requesting, engineering, and visualization of JSON scheduling data from an API endpoint using the Request, Pandas, Numpy, and Matplotlib libraries.
- Designed and implemented a relational database schema in PowerBI to reduce data repetition by 50%.
- Developed and presented dynamic and meaningful data visualizations using PowerBI and Matplotlib to advise the Dean of Engineering on the construction of an additional engineering building.

PROJECTS

RAY MARCHED 3D ART GENERATOR | 3D Modeling and Rendering (10/2022 – 11/2022)

- Created a React and WebGL powered web application that uses a GLSL shader and ray march rendering to produce mesmerizing randomized 3D shape patterns with a selected material capture shader.
- Designed and implemented a React GUI component for the user to easily select a shader and randomize their artwork.
- Learned the fundamentals of ray marching to write an engine for rendering signed distance functions as objects.

FULL STACK CREATIVE WRITING BLOG | Full Stack (09/2022 – 10/2022)

- Built a full-stack MERN blog application authenticated with Firebase to host my writing portfolio with Google Cloud.
- Implemented a React front-end with a navigation bar, articles, and login pages using react hooks and React Router.
- Created a Node.js server backend with a RESTful Express.js API to get and update user upvotes and comments.
- Integrated a MongoDB database with the backend server to host articles and user information in the cloud.

BLENDER PYTHON WALLPAPER CREATOR | Object-Oriented Programming (11/2021) – (12/2021)

- Designed and coded a PyQT GUI that interacts with the Blender API and allows users to easily customize and render procedurally generated cube patterns with dynamic materials and lighting conditions as a computer wallpaper
- Modeled a range of multivariable functions for the user to select as a default pattern before further customization

EDUCATION

BASc, Systems Design Engineering (Dean's List) | University of Waterloo (09/2021) – PRESENT
Practical OpenGL Fundamentals with C++ | Udemy (05/2022) – (06/2022)
Python for Data Science and Machine Learning | Udemy (07/2021) – (09/2021)
Neural Networks and Deep Learning | Coursera (01/2022) – (02/2022)