Mark Seufert

Computer Engineer - University of Waterloo
www.markseufert.com | 226-600-0186 | markseufert1@gmail.com

RELEVANT EXPERIENCE

AMAZON – AWS | C++ DEVELOPER   Sep 2020 – Dec 2020

Created a logging library in C++ for a large opensource project called OpenTelemetry. Several of the main features included:

a. Extensible code. The libraries API and SDK contain abstract classes that users can extend from to implement additional components to fit their needs, like logging their custom datatypes.
b. Thread safety. Used mutexes to create a multiple-read single-write lock for thread-safe variables.
c. Backend support. Created log exporters to SQL and Elasticsearch backends by batching logs together and sending via a POST request. Used curl to make a custom C++ HTTP client and JSON to encode the body of the request.

NPX INNOVATION | FULL-STACK DEVELOPER   Sep 2019 – Dec 2019

Created a Christmas game to promote the company that ended up attracting 100s of kids to the office. Consisted of two parts:

- C# / Unity for game design. Created an infinite runner where Santa jumps over various obstacles. The global high score was stored in Firebase, used procedural generation for obstacle placement, and used GIMP to make a simple UI for kids.
- Arduino and an IR sensor for jump detection. Wrote Arduino code in C to detect when someone physically jumped, and the command was sent to the unity game to make Santa jump virtually.

Developed a tracking app called X-TRACK to monitor the location and status of all employees. Used Android Studio for the mobile interface, Flask for web server, Firebase for data storage, and Postman for testing REST endpoints

LENS IMMERSIVE | C++ AND MATLAB DEVELOPER   Jan 2017 – Dec 2017

Worked on VR video compression software called TORII. Two of the main tasks given were to:

- Converted the codebase from MATLAB to C++, resulting in an executable file and a speed increase of 100x.
- Created an arithmetic bitstream compressor which compressed TORII video files an additional 5%. Used MATLAB for prototyping, C++ for implementation, and performance profiling through the Visual Studio Profiler for optimizations.

INDEPENDENT PROJECTS

WATERLOO ENGINEERING COMPETITION | WINNER   Jan 2020

Worked in a 4-person team to designed and build a Bluetooth controlled robot with the ability to retrieve objects beneath cups.

- Used C / Arduino for the robot logic, Java to create a simple UI, and a 9V battery + H bridge for motor control.
- Awarded a prize fund and advanced to the Ontario Engineering Competition, where we competed for nationals

TRIBREAK | DEVELOPER   Apr 2019

Developed a minimalist puzzle game for Android that requires the player to strategically break triangles.

- Used C# / Unity for game design, and spent $300 marketing it myself using Google Ads (only 500 downloads tho 🙁)
- Available on Google Play: https://play.google.com/store/apps/details?id=com.MWAS.TribreakV2&hl=en_CA

FRACTAL RENDERER | DEVELOPER   Feb 2019

Created an interactive fractal viewer that allows the user to navigate the infinitely detailed Mandelbrot Set.

- Used C++ to create a fractal and complex number classes, and used GLFW / OpenGL for rendering.
- Wrote a research paper on potential algorithm optimizations: http://markseufert.com/Mandelbrot.pdf

SKILLS

LANGUAGES

Over 5000 lines:
C • C++ • C# • Java • JavaScript • MATLAB

Over 1000 lines:
Python • SQL • HTML/CSS • Shell • Assembly

TOOLS

Unity • Visual Studio • Android Studio • Arduino •
OpenGL / WebGL • Flask • Postman • MySQL •
Git • Blue Prism • Linux • PowerApps • TCP • Foosball