

# Sam Wanuch

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Resourceful, independent, problem solver

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## WORK HISTORY

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### SOFTWARE DEVELOPMENT ENGINEER INTERN

**ADEPTMIND INC.**, Toronto, ON Fall 2017

- Independently developed a distributed web crawler in Python with MongoDB
- Developed a live statistic querying and monitoring service in Javascript and Golang

### GPU C++ DEVELOPMENT TOOLS ARCHITECT

**NVIDIA**, Santa Clara, CA Winter 2017

- Optimized data processing tool to be 20 times faster and use 6 times less memory
- Added features to and optimized performance of data capturing tool

### SOFTWARE DEVELOPER - PLATFORM, TOOLS, AND RESEARCH

**BIG VIKING GAMES**, London, ON Summer 2016

- Redesigned file processing pipeline in Java to take  $\frac{1}{3}$  of the time through multithreading
- Adapted the C++ implementation of Cap'n Proto to work with Emscripten and javascript
- Created data forking system to store an apparent terabyte of data in only a few gigabytes using BTRFS

### STORYBOARD SOFTWARE DEVELOPER

**CRANK SOFTWARE**, Kanata, ON Fall 2015

- Optimized ANSI C89 file loader to reduce memory usage by 90%
- Designed nine-patch image editor and tools to automatically convert images
- Created a new Lua API for navigating the object graph of user interfaces

### ASSOCIATE PROGRAMMER - COMPANY OF HEROES 2

**RELIC ENTERTAINMENT**, Vancouver, BC Winter 2015

- Designed a major new system for content creators, improving speed by 80% for common tasks
- Improved existing tools according to requests and feedback from designers
- Tracked down and fixed elusive bugs in the game engine

## MAJOR PROJECTS

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### Real Time Ray Tracer: C++

20+ FPS raytracer built on a custom multi-threaded task tree execution engine. Able to render primitives, meshes, and computational solid geometry. Able to set all material properties (reflectivity, colour, etc) by position on a surface.

### Real Time Microkernel: C

A microkernel for the ARM 920-T microcontroller, with prioritized tasks. Heavily optimized to provide inter-task message passing capable of sending a message and receiving a reply in 2.7 microseconds (600 nanoseconds for a context switch). Used for real time control over multiple model trains.

### Game Engine: Python

A 2D tile based game engine and map editor featuring an in game console for real time insight and control of entities and engine subsystems, full control over entity behavior and rendering, animated textures, particle systems, and dynamic lighting.

## Education

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### University of Waterloo 2018

Bachelor of Computer Science, Honours    Minor in Combinatorics and Optimization  
Japanese Language 1 Certificate