

JEFF NIU

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work experience

COREAVI

Intern, Embedded Graphics Developer

- Implemented **EGL Compositor** Extension in ArgusSC **OpenGL driver**
- Added **VxWorks** 6.x/7 real-time process and multi-thread support to Argus
- Added support for RS-343A compliant analog video modes
- Ported Argus **OpenCL** driver to 64-bit Yocto embedded **Linux**
- Developed hardware/software demos and profiled/optimized customer code

Summer 2018

YAHOO!

Intern, Software Engineer

- Contributed data visualizations, task scheduling, and SQL/Druid query optimizations to the **open-source** development of Apache Superset
- Built a **production tool** for real-time anomaly detection on Druid streams
- Created **ember-localforage**, an EmberJS Data adapter that persists to browser cache
- Developed a **Bullet sprout** to query in real-time the Twitter Firehose

Fall 2017

teams

TEAM WATERLOOP – CANADA’S HYPERLOOP TEAM

Lead, Software

- Created **WLib**, a collection of C++ libraries optimized for **embedded** systems, including an STL, JSON library, and a **constant-time** memory allocator
- Designed a **fail-safe**, reliable software infrastructure for the pod based on a CAN network and distributed hubs
- Developed **Wio**, a fully-featured build tool and **package manager** for C/C++ supporting native and embedded environments (AVR/ARM) built with Go

Sep 2016
to present

UW NANO ROBOTICS GROUP

Technical Lead, Controls

- Used **OpenCV** to develop an occupancy grid localization algorithm that tracks the microbot, nearby objects, and walls in C++
- Applied a modified A* procedure and 2D game physics to create a microbot AI that can autonomously push an object through a labyrinth
- Main developer of **Minotaur**, UWNRG’s controls software built in **Qt**

Sep 2016
to present

projects

CERPENT

A Basic C-language interpreter

- Leverages **clang**’s libraries to generate line-by-line ASTs parsed by Cerpent
- Uses LLVM **just-in-time compilation** for user-defined functions
- Supports pre-compiled modules in C++ exposed to interpreter

FRAKTALS

A Mandelbrot and Julia set explorer

- Mandelbrot, Julia, and *n*-brot fractal explorer up to 2e+20 magnification
- Hardware accelerated rendering with **Nvidia CUDA-C** up to 4K resolution

GA TRUSSER

A 2D Truss Optimizer

- **Genetic algorithm**-based truss optimizer using **Eigen** and OpenBEAGLE
- Accounts for beam geometry, fixed lengths, and buckling modes

education

UNIVERSITY OF WATERLOO

B.A.Sc. in Mechatronics Engineering

Expected Spring 2021

GPA 4.0 (Rank 1, 97%)

languages tools

C++, C, GO, JAVA, PYTHON, JAVASCRIPT, x86 ASM, HTML/CSS
GIT, UNIX, VIM, GDB, INTELLIJ, ECLIPSE, VISUAL STUDIO