Hayden Goodfellow

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Languages: C++, C, Python, C#, Verilog, Assembly (ARMv7-A)
Web: JavaScript, JQuery, CSS, HTML, Bootstrap
Technologies: PyTorch, NumPy, Git, PostgreSQL, OpenCV, Unity, Linux, LaTeX

Education

Bachelor of Applied Science in Computer Engineering - University of Toronto

· Minors in Machine Learning and Engineering Business — Graduation Expected 2022

Work Experience

Software Developer - Amnesia Escape Games — Summer 2019

· Developed software to monitor and control over 30 devices such as RFID readers, actuators, lights, and sensors which were connected to 11 Arduino Nano controllers

· Created, using C++, a multithreaded master controller for the entire system which communicated using an RS-485 half-duplex bus and socket connections

· Used OpenCV in Python with remote cameras connected via sockets to create part of a puzzle

· Utilized a PostgreSQL database to log and analyze sensor data for testing and balance purposes

District Referee - Ontario Soccer Association — 2012 - 2018

Projects

Machine Learning & Computer Vision Team - UTRA - Autonomous Rover

Python • PyTorch NumPy • OpenCV

· Currently developing, with PyTorch and OpenCV, a ML model which can detect various road signs and markings and instantaneously relay this information to other systems on the rover

· Created, with Python and OpenCV, a web scraper which gathers images and applies multiple perspective transforms to generate large, high-quality datasets

Geographic Information System — C++ • LibCurl • GTK

· Developed, using C++, a full-scale multithreaded mapping application tailored to users with vision impairments, such as colour blindness

· Retrieved and displayed real-time weather and transportation information using LibCurl

· Utilized optimal algorithms/data structures to ensure strong performance (such as A* and KD-trees)

Social Isolation Simulator — C

· Created, using C, a simulator showing the effects of social isolation on a pandemic

· Created a custom VGA controller which utilizes page flipping for smooth animations

User-Level Multithreading Package — C

· Full multithreading package for user-level threads which virtualize one or more kernel threads

· Includes blocking/sleeping threads and preemptive or cooperative thread scheduling

· Thread safety assured with self-implemented blocking and spin locks using atomic instructions

Autonomous Robot - Space Engineering & Exploration Kompetition (SEEK) — Arduino • C

· Created an autonomous AI for a rover which was capable of navigating quickly and safely around obstacles and inclines. Rover could also be controlled manually using Bluetooth

· Optimized our pathfinding algorithm to ultimately finish in 2nd out of over 40 teams