Chris Gravel

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Education

BASc Mechatronics Engineering with AI Option, *University of Waterloo* 2014 - 2019

Skills

Software Languages	Python, C, C++, Bash, SQL, Matlab, Javascript
Software Tools	Microcontrollers, Linux, ROS, Git, OpenCV

Experience

Senior Software Engineer (Nest), *Google LLC* Sept 2019 - Present

- Lead a team of 5 engineers to design and build infrastructure for supporting Google's Matter launch. The infra we built supports creating dynamic topologies of real devices with a complex configuration matrix of more than 100 params and served as a release gate for millions of devices. (Python)
- Designed and implemented pipelines for continuous delivery and continuous integration testing. Integrated pipelines across multiple ecosystems (Google internal, Github, Gerrit, Jenkins). (Python, Bash, Docker, Jenkins)
- Scoped infrastructure work for supporting new hardware in our test automation. Took ownership of design, and implementation while leading and providing guidance for junior SWEs. Infrastructure supported 20+ hardware devices, 1000+ automation tests, and impacts millions of users. (Python)
- Ideated and implemented a novel solution that applies statistical tools for detecting software regressions involving latency which reduced engineering effort to root cause from 4 hours to 1 min. (Python, SQL, Jenkins, Two sample T-test, DataStudio)
- Used optimization and ML techniques to create a flicker detection algorithm with a 96% recall rate. (Python, numpy, scipy, skimage)
- Mentored engineers to help them advance in their career and adapt to the professional environment. Arranged quarterly team gatherings for 15+ people. Took advice from those willing to teach me. (Soft skills)

Perception Team Engineer, *Avidbots Corp.* May 2018 - Aug 2018

- Developed mathematical model for optimal sensor layout for cliff detection using 1D sensors. (Python, Geometry, Numerical Methods)
- Automated collection and labelling of vision data using localization information and camera feeds on the robot. (OpenCV, Python, C++)

IoT & AI Developer, *IBM* Sept 2017 - Dec 2017

- Created real-time object recognition solution with 95% accuracy for POC contract using supervised learning on a FasterRCNN network. (Python, FasterRCNN)

Robotics Software Developer, *Avidbots Corp.* Jan 2017 - April 2017

- Developed numerical model in C++ and Matlab for simulating trajectory to determine traversal time. (C++, Python, ROS, Matlab, Numerical Methods)
- Improved performance by 10% by minimizing kinematic accelerations on robot caused by trajectory jaggedness. (C++, ROS, OpenCV)
- Wrote unit tests for a robotics system on the ROS platform in C++ using the Google test framework. (C++, ROS)

Engineering Projects

Optimization of Vehicle Suspension using Enhanced Hillclimbing — Python, Matlab 2018

- Created a novel search algorithm that outperforms other state-of-the-art search algorithms in the field.

Git Status Tool (gst) — Python 2018

- Commandline tool for improving my own Git workflow. Compatible with Mac and Linux.

Asteroids Game built on ARM Cortex-M microcontroller — C 2016

- Re-created the game of Asteroids on an ARM Cortex-M microcontroller with RTOS.
- Used semaphores and mutexes to enable synchronous multitasking operations.
- Created physics engine to model the original game physics.

Achievements

- Runner-up in an international IBM internal coding competition (CodeBlue 2017).
- Received multiple awards (4 spot bonuses, 2 peer bonuses) at Google due to impact of contributions.
- Received Python readability status at Google which allows me to approve Python changes for their style.