David Michelman

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www.davidonbuildingthings.com

https://github.com/daweim0

OBJECTIVE:
Experienced software and robotics engineer seeking a summer internship in software development

EDUCATION:
Rensselaer Polytechnic Institute, Troy NY GPA: 3.93 / 4.0 Graduating May 2020
Pursuing dual major in Computer Science and Computational Mathematics

INTERNSHIPS AND RESEARCH EXPERIENCE:

Robotics and Build Engineering Intern at Olis Robotics (Formerly Bluhaptics) Summer 2018

- Designed and Prototyped multiple migrations strategies for seamless conversion of an OpenCL codebase to CUDA, including transparent data migration between CUDA and OpenCL
- Reduced build system failures from daily occurrences to rare events by migrating a nightly build system to Amazon Web Services and automating startup, configuration, and updating of build workers
- Combined independent C++ codebases requiring mutually incompatible compilers into a single stable and maintainable Catkin workspace (A build system for combining CMake projects)
- Wrote a highly flexible camera calibration utility and an interface for a new depth camera

Research Assistant, University of Washington's Robotics and State Estimation Lab Summer 2017

- Wrote and trained convolutional Neural Networks in the Tensorflow library that generated highly discriminative image features for pose recognition and optical flow
- Optimized the structure of different convolutional neural networks
- Created an automated system to evaluate network structures and modified our existing codebase to allow adding new network structures without breaking compatibility with existing networks
- Worked closely with a post-doctorate machine learning researcher

Research assistant, University of Washington's Sensor Systems Lab 2014 — 2016

- Developed and implemented a machine learning based control algorithm combined with a full simulator for balancing under-actuated and unstable robots (applied to an 'acrobot' robot)
- Wrote a fully instrumented simulator, with both visual and numeric analytic capabilities. Written in Python with C extensions and the Open Dynamics Engine physics engine
- Started implementing the control algorithm on real hardware with promising initial results
- Worked alongside graduate students
- Summary research paper can be found on my website describing our computer science approach to what previously has been treated as a more mathematical approach of control theory

RELEVANT SKILLS:
Programming languages & Environments: C++, Python, Java, ROS, CMake, AVR C
Development Environments: Linux (Ubuntu) & Windows

CURRENT EXTRACURRICULAR ACTIVITIES:

Vice President – RPI Rock Raiders – University Rover Challenge Fall 2016 — present

- Managed software development team, wrote control code for a rover-mounted robotic arm, wrote a simulator that served as a drop-in replacement for actual hardware incorporating contributions from other team members
- Reported on team's financial resources and project management plan for competition organizers

Data Structures Tutor Spring 2018

- Helped Data Structures students understand lecture material, do homework, and decipher compiler errors (4+ hours/week)

RPI Sport Taekwondo Club member Fall 2016 — present

ROBOTICS AND OTHER RELATED PROJECTS:
Computer controlled robot arms – Built two for Science Olympiad Competition

- Used hand written inverse Kinematics, networking, basic electrical and mechanical engineering

R/C Tricopter (3 rotor "quadcopter") built and programmed from scratch, three 3d printers
HOBBIES: Black belt in Karate (American Kenpo), film making, and mild sarcastic humor