David Michelman

6045 Ann Arbor Ave NE, Seattle WA 98115

Email miched@rpi.edu | Phone 425-681-8176

www.davidonbuildingthings.com

https://github.com/daweim0

OBJECTIVE:

Experienced software developer and robotics engineer seeking summer internship with a software development organization

EDUCATION:

Rensselaer Polytechnic Institute, Troy NY GPA: 3.9/4.0 Graduation: May 2020

Pursuing dual degrees in Computer Science and Computational Mathematics

RELEVANT SKILLS:

Programming languages & Environments: Python, C++, Java, AVR C, ROS, Tensorflow

Development Environments: Linux (Debian) & Windows

PROGRAMMING AND RESEARCH EXPERIENCE: **Summer 2017**

Research Assistant at University of Washington's (UW) Robotics and State Estimation Lab

- Wrote and trained convolutional Neural Networks in the Tensorflow library that generated highly discriminative image features for pose recognition and optical flow.
- Worked on optimizing 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.
- Project code at https://github.com/daweim0/Just-some-image-features

Research assistant at UW's Sensor Systems Lab **2014 through 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 primarily in Python with C extensions and the Open Dynamics Engine.
- Reverse engineered existing acrobot hardware (no existing documentation), added lower noise sensors and a custom acceleration-control motor driver.
- Began to implement the control algorithm on hardware with promising initial results.
- 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.

CURRENT EXTRACURRICULAR ACTIVITIES:

RPI Rock Raiders – Vice President **Fall 2016 through present**

- Team competing in the University Rover Challenge (about 20 members)
- Vice president – Wrote reports on team's financial/facility resources and project management plan for competition organizers
- Directly oversaw Treasurer, Webmaster, and Social Media Manager
- Member of software development team, wrote control code for a rover-mounted robotic arm. Improving it and adding more intuitive UI for 2018 competition.

RPI Sport Taekwondo Club **Fall 2016 through present**

ROBOTICS AND OTHER RELATED PROJECTS:

Digitally controlled robot arms – Two built 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, built during high school

PAST JOBS HELD:

Data Structures Tutor **Spring 2018**

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

Teaching assistant at temple (TDHS) **9th through 12th grade**

- Taught kindergarten, third, fourth, and sixth grade students Jewish history and Hebrew.

HOBBIES: Black belt in Karate (American Kenpo), bicycling, film making