David Michelman
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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 Intern at Olis Robotics **Summer 2018**

- Designed and prototyped multiple migration strategies for conversion of an OpenCL codebase to CUDA, providing transparent interoperability and data migration between OpenCL and CUDA
- Reduced build system failures from regular occurrences to rare events by migrating a nightly build system to Amazon Web Services, making build workers stateless, and automating startup, configuration, and updating of build workers
- Combined two C++ codebases requiring mutually incompatible compilers under a single build system, allowing use of separate CPU and GPU compilers
- Wrote a highly flexible camera calibration utility to be included in a shipped product

Summer 2017

Neural Net Research Assistant, UW Robotics and State Estimate Lab

- 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

2014 - 2016

Robotics Research Assistant, University of Washington's Sensor Systems Lab

- 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
- 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 AND COURSE WORK:
Languages & Environments: C++, Python, Java, ROS, CMake, Linux (Ubuntu) & Windows
Relevant Course Work: Algorithms, Data Structures, Computer Vision, Parallel Programming, Numerical Computing, Robotics 2

CURRENT EXTRACURRICULAR ACTIVITIES:

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

- Managed our software development team, wrote control code for a rover-mounted robotic arm
- Wrote a simulator that served as a drop-in replacement for rover hardware, allowing development without physical access to the rover. Incorporated many 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 (Black Belt in Kenpo) **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