Peter Johnson

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EDUCATION

HARVEY MUDD COLLEGE
B.S. in Engineering
Expected May 2020 | Claremont, CA
Maj. GPA: 3.54/4.0

PEKING UNIVERSITY
Summer Study Abroad
Summer 2018 | Beijing, China
Program focused in Electrical Engineering

COURSEWORK

IN PROGRESS
State Estimation
Engineering Clinic
Algorithmic Trading

COMPLETED
Microprocessor Sys Design & App
Digital Logic and Computer Eng
Robotics with ROS
Optimal Control
Adv Systems Engineering II (Controls)
Adv Systems Engineering I (Signals)
Data Structures/Program Dev
Machine Learning for Engineers
Electronic & Magnetic Circuits/Devices
Principles of Computer Science
Discrete Math

SKILLS

ENGINEERING AREAS
Kalman Filter • Particle Filter • Baye's Filter • Classic & Modern Control • Path Planning • Embedded Systems • Signal Processing • Digital Logic Design

ENGINEERING TOOLS
SystemVerilog • Arduino • FPGA • ROS
CANalyzer • Oscilloscope • Multimeter
SIMULINK •Soldering • Machine Shop

PROGRAMMING
C • C++ • Python • MATLAB • Assembly

AWARDS

2016-2019 Dean's List (Each semester)
2016 Hispanic Scholarship Fund Scholar
2016 National Merit Scholar
2016 Valedictorian
2015 Eagle Scout

WORK EXPERIENCE

DOOSAN BOBCAT | Clinic Engineer
September 2019 – Present | Claremont, CA | Team of 5
I modeled system dynamics of a track loader and implemented a P-Controller in python to interface with machine CAN bus for point tracking. Modified implementation of A* algorithm to smooth path. Development work in localization

DOOSAN BOBCAT | Robotics Engineering Intern
May 2019 – August 2019 | Bismarck, ND | Team of 2
Converted loader to robot leveraging ROS, and python on an embedded Linux Board. Interfaced sensors and machine control with board via the machine CAN bus and arduino serial communication. Prepared demos of radar and Lidar obstacle detection.

TECHMATION | Clinic Engineer
September 2018 – December 2018 | Claremont, CA | Team of 5
Characterized a high frequency radar for object detection applications. Team lead on waveform signal processing simulation in MATLAB. Analyzed demos for understanding of DBSCAN clustering and Kalman Filtering.

HARVEY MUDD COLLEGE | Tutor/Grader
Sept 2017 – Present | Claremont, CA
Tutor/Grader for Digital Electronics and Computer Architecture, Principles of Computer Science, Data Structures, Engineering Systems and Linear Algebra

UNDERGRADUATE PROJECTS

EXTENDED KALMAN FILTER & PARTICLE FILTER | Team of 2
February 2020 | Claremont, CA
Used IMU and Lidar data to localize a robot traveling in a square path. Given a known landmark, developed the motion and measurement models and implemented the filters in Python. Achieved RMSE path crosstrack errors of 0.281 m and 0.204 m.

PATH TRACKING WITH MPC | Team of 2
December 2019 | Claremont, CA
Developed kinematics of bicycle model. Implemented Model Predictive Controller in MATLAB to minimize trajectory crosstrack error with additional weights and constraints for smoothness of path.

AUTONOMOUS MOBILE ROBOT | Team of 2
February 2019 – May 2019 | Claremont, CA
Developed stack for differential drive robot. Integrated motors, encoders and ultrasonic sensors into arduino platform. Developed odometry, point tracking, and RRT path planning nodes in python with ROS message passing.

MESSAGING AND DISPLAY SYSTEM | Team of 2
October 2018 – December 2018 | Claremont, CA
Developed SystemVerilog and C code for a VGA driver which took in location and message data via SPI from a Raspberry PI to parse received HTML requests from an iOS app.

INTERNET OF THINGS LIGHT SENSOR | Team of 1
October 2018 | Claremont, CA
Designed a light sensor using a Photodiode. Implemented an ADC read and SPI communication in C for Raspberry Pi starting from the GPIO pins' memory map. Created a webpage on an Apache 2 server to execute reads and to display the voltage