Mateo Guaman Castro

Medford, MA | (339) 224-7936 | mateo.guaman1998@gmail.com
mateoguaman.github.io

Education

Tufts University, Medford, MA
Bachelor of Science in Electrical Engineering, expected May 2020
Minor in Computer Science
GPA: 3.69

Skills

Programming Languages: Python, C++, C, MATLAB, Assembly, HTML, CSS, LabVIEW
Products and Software Tools: ROS (Robot Operating System), Tensorflow, OpenCV, NumPy, Matplotlib, PDDL, Google Cloud Vision, Gazebo, VHDL, SPICE, Raspberry Pi, Arduino, Keil MDK
Language: Spanish (native)

Research Experience

AIR Lab, Tufts University, Undergraduate Research Assistant, June-Present 2018

- Developed simulation environment for research in discovery of action primitives for intelligent agents
- Developed action sequences for Baxter robot to be called by a PDDL planner.
- Implemented computer vision methods for the agent to analyze the state of its environment

CRISP Lab, Tufts University, Undergraduate Research Assistant, June-August 2017

- Designed and built a land robot from scratch to be used on research in obstacle avoidance with computer vision.
- Controlled from a Raspberry Pi that communicated through ROS to an Arduino that controls the sensors (IMU, ultrasonic, infrared) and movement of the robot.

Work Experience

SharkNinja Operating LLC, Electrical Engineering Intern, June-August 2018

- Designed and assembled a testbed for ARM Cortex-M0 microcontrollers to decrease future production costs for Ninja kitchen products and Shark cleaning products
- Developed and prototyped new motor and vacuuming functionalities for Ninja kitchen products to improve user experience

Center for Engineering Education and Outreach, Tufts University, Summer Intern, June-August 2017

- Built a local network of IoT devices, including an Arduino-based IoT sign for Prof. Ethan Danahy's Lab, to develop and showcase the IoT educational capabilities of the LEGO MINDSTORMS EV3.
- Developed Raspberry Pi circuits to control the IoT devices over the internet.

Projects

Semantic autonomous mapping, 2018

- Developed an autonomous robot that detects signs inside a building and performs optical character recognition in real time to create a semantic representation of the building.
- Detected signs from a real time video stream using a combination of color thresholding, contour detection and other filtering techniques with OpenCV.
- Designed a map navigation algorithm for a Turtlebot robot running ROS.

Smart Bike Lights, 2018

- Implemented Kalman filter to get accurate estimates of roll, pitch and yaw of a bike
- Lead team of five at MakeHarvard 2018 that reverse engineered a set of existing bike lights to interface with a Raspberry Pi in order to build automated turning lights and braking lights

Other

Member of Electrical Engineering student board, 2018

- Appointed by department chair to provide student feedback about the department to a board of Electrical and Computer Engineering professors.

IEEE Club Class of 2020 Representative, 2018

- Organize events relevant to the EECS community at Tufts and outreach

Teaching Assistant, Introduction to Electrical Systems, 2018

Awards

- Recipient of MakeHarvard 2018 Reverse Engineering and Documentation Award
- Dean's List, 4 semesters

Relevant Courses

Reinforcement Learning, Introduction to Machine Learning (MOOC, Stanford), DeepLearning.ai Specialization (MOOC, Andrew Ng), Intelligent Autonomous Robots, Algorithms, Data Structures, Linear Systems, Linear Algebra, Differential Equations, Calculus 1 - 3, Discrete Math, General Physics 1-2