LIAM DUGAN

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EDUCATION

University of Pennsylvania — School of Engineering and Applied Science, Philadelphia PA
Candidate for Master of Science in Engineering in Robotics — 4.00/4.00 (Expected Grad: December 2019)
Candidate for Bachelor of Science in Computer Engineering with Minor in Japanese Language — 3.59/4.00
(Cumulative GPA Excluding Freshman Year — 3.86/4.00)

Coursework: Embedded Systems for Life Critical Applications, Micro-controller lab, Interactive Computer Graphics, Operating Systems (A+), Networked Systems, Mechanical Design, Computer Organization and Design
Technical Skills: C++, C, Java, Javascript, Python, ROS, PCL, OpenCV, Velodyne, Verilog, OpenGL, MATLAB, HTML/CSS, React, Node, Mongoose, Express, bash scripts, Laser cutting/3D printing, UPPAAL, MQTT
Japanese: **JLPT N2** certified; Able to speak read and write at upper intermediate level; business fluent

St. Joseph's Preparatory High School — Philadelphia, PA — Cumulative GPA: 4.0/4.0

WORK EXPERIENCE

Employment:

Robotic Research LLC — Software Engineering Intern, Clarksburg, MD Summer 2018
- Worked on the perception stack for autonomous leader-follower military convoys (team AGR)
- Operated on Velodyne Lidar at driver level developing and prototyping various object classifiers
- Classifiers ranged from small artifacts such as sun speckles up to larger more complex object classifications such as dust and vegetation—requiring extensive paper surveys.
- Gained experience with C++, Python, OpenCV, PCL, ROS, pcap, emacs, gdb, grep

Computer Architecture Teaching Assistant, Philadelphia, PA Spring 2017 to Fall 2018
- Teaching students topics such as binary operations, assembly language, computer data path, memory management in C, function calling convention, and stack frames
- Projects include a minimalistic compiler and simulating a virtual 16-bit computer in C

Javascript Online Course Teaching Assistant, Philadelphia, PA Fall 2017
- Taught UPenn sponsored course covering HTML, CSS, Node.js, Mongoose, React.js
- Helped create course infrastructure (i.e. assignments, autograders, etc.)
- Answered all questions for course of ~4000 students

PROJECTS

CloudChaser - ***1st place & Best use of Cloud Hosting at PennApps XVII ~ January 2018***
- Acted as main project manager and designer for robot & algorithm, worked on both hardware and software teams
- Built platform to allow low resource robotics or IoT devices to do high level image processing on the cloud
- Designed such that no computation is done on device — any device that can stream video can run CloudChaser
- Custom built robot "Chase" to demonstrate capabilities of system for PennApps hackathon demo
- Built with custom 3D printed chassis, python scripts connected over TCP, Raspberry Pi, Amazon Echo Dot / Alexa
- Drafted academic paper: *Cloud Chaser: Real Time Deep Learning Computer Vision on Low Computing Power Devices* which introduces and compares various methods of reducing latency for real time cloud computer vision. (Under review)

Todd: The inter-dimensional robot - ***3rd place at PennApps XVI ~ September 2017***
- Worked on Hardware team for Todd, designed Arduino bot and our controller as well as their interface
- Todd mimics the movements of a virtual Todd in the game; when virtual Todd hits an obstacle real Todd stops
- Two players cooperatively navigate around obstacles, one looks at the virtual world and the other controls Todd
- Built with Arduino, Bluetooth HC05 module, Unity 3D, all code written completely from scratch