

# Naoki Yokoyama

(US citizen)

Website: [naoki.io](http://naoki.io) | [linkedin.com/in/naokiyokoyama](https://linkedin.com/in/naokiyokoyama)

## Education & Skills:

**Northeastern University** Boston, MA

**GPA: 3.64**

**May 2018 (MS & BS degrees)**

*Electrical and Computer Engineering: Concentration in Computer Vision, Machine Learning, and Algorithms*

**Merit Awards & Honors:** Joseph Spear Scholarship, Clara & Joseph Ford Scholarship, Karen T. Rigg Shining Torch Scholarship, SASE Kellogg Scholarship, Dean's Scholarship, Dean's List, Honors Program, Eta Kappa Nu

**Relevant Coursework:** Intro to Machine Learning, Intro to Computer Vision, Robotics Sensing & Navigation, Assistive Robotics, Robotics, Classical Control Systems

**Skills:** Keras, TensorFlow, OpenCV, Python, C/C++, ROS, MATLAB, Linux

## Projects & Research Experience:

**Research at Robotics and Intelligent Vehicles Research Lab at Northeastern**

**Jan 2018 –**

- Used Tensorflow and Darknet to train and implement SSD and YOLO object detection models.
- Created scripts in OpenCV to generate artificial training sets from videos taken of each object, augmented with various types of noise to make detection more robust.
- Currently developing a deep convolutional shape completion model to generate 3D voxel grids from images and partial 3D scans in order to improve grasp detection for the robot.

**Deep Learning Tutorials** | [naoki.io/dlt](http://naoki.io/dlt)

**Jan 2018 –**

- Creating posts on my site detailing various deep learning concepts, such as convolutional neural nets, activation functions, and autoencoders, citing papers published at various conferences.

**Udacity AI for Robotics Project** | [naoki.io/portfolio/lane\\_detection](http://naoki.io/portfolio/lane_detection)

**Feb 2017 – May 2017**

- Used OpenCV to highlight lanes in dashcam footage recorded from driving around Boston.
- Implemented convolutional filters, Canny edge detection, color and contour thresholding, and perspective warping to isolate and detect lane markers.

**Quadcopter** | [naoki.io/portfolio/quadcopter](http://naoki.io/portfolio/quadcopter)

**May 2013 – May 2014**

- Programmed from scratch in C with an Arduino communicating to a 10DOF IMU (accelerometer/gyroscope/magnetometer/barometer) for tracking position and orientation to self-stabilize mid-air.
- Researched PID controllers, inertial measurement units, sensor fusion, interrupt service routines, and BLDC motor driving at the Polytechnic Institute of New York University.

## Professional Experience:

**Bluefin Robotics (Electrical Engineering Co-op)** Quincy, MA

**July – Dec 2017**

- Designed a ground fault detection system to sense and locate faults in the AUV using FFT and pilot signals, implemented in C.
- Designed a robust power interface board to provide power and communication busses between the main computer, peripherals, and smart lithium batteries.

**iRobot (Robotics Engineering Co-op)** Bedford, MA

**July – Dec 2016**

- Designed the hardware and software of a smart Li-ion battery charger that charged batteries quickly and efficiently and communicated with its onboard battery management system through SMBus.
- Developed Python scripts for the Roomba 900 to collecting more information about the home using various sensors, which would be conveyed to users in an informative graphical map.

**Medtronic (R&D Electrical Engineering Co-op)** Boston, MA

**May – Dec 2015**

- Designed the schematic of a new version of the embedded system that interfaced the robot's computer with peripherals.
- Developed Python scripts to allow users to change display and scaler settings using PySerial.
- Designed schematic and layout for the robot's power distribution system.