# NATHANIEL TODD

MASTER OF SCIENCE COMPUTER SCIENCE STUDENT

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## Skills

**PROGRAMMING LANGUAGES**
Python
C
Java
Matlab
Assembly

**ENVIRONMENTS**
ROS
Unix
Linux
Windows
Pytorch
Tensorflow

**COURSEWORK**
Machine Learning
Computer Vision
Algorithms
Algorithm Implementation
Formal Methods
Data Structures
Embedded Systems and Microcontrollers
Systems Software
Signals and Systems Analysis
Microelectronic Circuits
Digital Logic
Discrete Mathematical Structures
Robotics Intelligence: Planning
Computational Photography
Big Data Ethics
Deep Learning
Machine Learning Theory
Intro to Database Systems

## Education

### Georgia Institute of Technology
Aug. 2018 to Current

M.S. Computer Science 2020
Specialization: Machine Learning
Specialization: Perception and Robotics
GPA: 3.8

### University Of Pittsburgh
Aug. 2014 to Apr. 2018

B.S. Electrical Engineering 2018
Minor: Computer Science
Concentration: Signals and Systems
GPA: 3.6 - Magna Cum Laude

## Employment

### Bloomfield Robotics
Pittsburgh, PA
CV/ML Intern
May 2019 to Aug. 2019

• Applied GPU acceleration classical stereo vision
• Experimented with deep network architectures for object detection
• Fine-tuned existing networks with proprietary training data
• Integrated vision systems with ROS on Nvidia TX2 and Xavier platforms

### Georgia Institute of Technology
Atlanta, GA
Graduate Teaching Assistant, Graduate Research Assistant
Jan. 2019 to May 2019, Aug. 2018 to Current

• CS 4731/7632 Game AI Course TA
• Graded Homeworks/Exams
• Held office hours to assist students with class topics
• Developed Android Java Applications for GTRI Advanced Concepts Laboratory

### ABB Inc.
Oakmont, PA
R&D Engineering Co-op
Jan. 2017 to Dec. 2017

• Completed two co-op rotations, one in hardware design and one in software design
• Designed and prototyped TPS13 Turbine Protection System Board
• Used OrCAD Capture and Layout to produce necessary schematics and PCB layouts
• Programmed embedded software for TPS13 using C and VHDL
• Developed project overview document to assist future interns to understand the technical steps of board development

### General Electric Power Conversion
Pittsburgh, PA
EID Internship
May 2016 to Aug. 2016

• Assisted in design and configuration of drive control software
• Collaborated with project engineers to complete motor drive installation and commissioning at test site
• Gained an understanding of the Services Team to complete a work instruction package
• Organized software summaries and documentation for New Product Introduction design reviews

### Mow'n'Go
Greensburg, PA
Owner
Apr. 2013 to Aug. 2015

• 40+ hours per week, led 2 full time employees and other contracted employees
• Maintained between twenty and thirty lawns per week with Independent Landscaping
• Performed all mechanical maintenance and repairs

## Projects

### Camera Calibration and Fundamental Matrix Estimation with RANSAC
Oct. 2018 to Nov. 2018

• Developed a method for improving the local feature matching application.
• Calculated fundamental matrix to relate points along epipolar lines and eliminate feature matches not satisfying the epipolar line relation.

### Local feature Matching Application
Sept. 2018 to Oct. 2018

• Created local feature matching algorithm by recreating a version of Harris' Corner detector, a SIFT descriptor, and a feature matching function.

### Senior Design Interactive Surface Localization System
May 2017 to Aug. 2018

• Designed low cost IR tracking system that can turn any display/surface into an interactive workspace

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## Awards

IARC7 · Best Systems Award and Awarded Most Points in American Venue  July 2017
- Member of University of Pittsburgh Robotics Club IARC7 Team
- Worked in with ROS and controller design
- Assisted with thrust predictive modelling

Pitt Innovation Institue, · Big Idea Competition - Awarded Cash Prize Runner Up Idea  Apr. 2016
- Developed web and android app framework to expedite shopping process
- Conducted competitive analysis research to narrow target market
- Collaborated with investors to build elevator and business pitches

Rowan University · Profhacks, Multiple Awards  Mar. 2016
- Best Use of Amazon Web Services, Best Tech Website, Best Internal Integration
- Developed web application to re-route self-driving cars to the nearest hospital in the case of an emergency

Swanson School of Engineering · Best in Section Conference Paper  Apr. 2015
- Best Use of Amazon Web Services, Best Tech Website, Best Internal Integration
- Developed web application to re-route self-driving cars to the nearest hospital in the case of an emergency

## Volunteering

Pitt Make a Difference Day · Annual Volunteer  Aug. 2014 to Apr. 2018
Pittsburgh, Pa