



Nathaniel Todd

Objective: Seeking Position as Machine Learning Engineer Starting Summer 2020

 nathanieltodd48@gmail.com

 724-961-2603

 nathanieltodd.com/cv

Education

Georgia Institute of Technology M.S. Computer Science

Specialization: Machine Learning

Specialization: Perception & Robotics

Graduation: May 2020 | GPA: 3.9

University of Pittsburgh

B.S. Electrical Engineering

Specialization: Signals & Systems

Minor: Computer Science

Class of 2018 | GPA: 3.6

Skills

Programming Languages: Python, C, C++, Java, Matlab/Octave, SQL

Engineering Tools: ROS, PyTorch, OpenCV, Git, Tensorflow

IoT/Developer Tools: Raspberry Pi, Arduino/Microcontrollers, Jetson TX2/Xavier

Extra-Curricular

Georgia Tech Salsa Club Vice President

- Increased club size through advertising and outreach
- Secured additional funding avenues for future stability
- Produced easier turn-over by reviewing all club officer responsibilities

K.I.D.S. Workshop Volunteer Instructor

- Helped middle schoolers build working circuits and software

BIG Idea Competition Team Cashout

- Pitched Cashout to investors
- Collaborated with industry mentors to refine our product

Pitt Robotics Club Team IARC

- Developed logging and image processing ROS nodes
- Designed prop thrust test bench

Experience

Computer Vision Engineer, Software Automation

Jan 2020 - Present

- Eliminated fabric placement error with the development of reliable fabric localization and fabric face detection
- Produced 30% speed up and eliminated dropped frames in vision feedback with implementation of counter based image synchronization
- Performed various camera tuning such as calibration and sharpness tests

Software Engineer, Georgia Tech Research Institute

Aug-Dec 2019

- Created reliable USB and UDP communication enabling real time updates
- Eliminated repeat engineering effort with self-populating license section

Machine Learning Intern, Bloomfield Robotics

May-Aug 2019

- Enabled real time stereo depth by applying GPU acceleration
- 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

R&D Engineering Co-op, ABB Inc.

Jan-Dec 2017

- Led new product design replacing 3 legacy products with single new design
- Tasks included circuit design, 10 layer PCB layout, C and VHDL development
- Finalized prototype with testing, sourcing, and placing manufacturing orders

Owner, Mow'n'Go

Apr'13-Aug'15

- Started from scratch and grew to 40 weekly customers
- Lead 2 regular employees and contracted others as needed

Projects

Weighted Jacobian Regularization for Robust Classification

Nov-Dec 2019

- Built on Jacobian regularization techniques by weighting the each element of the Jacobian by its distance to ground truth label
- Initial experiments showed modest improvement in smoothness decision boundaries and robustness to attacks

Automatic Star Trail Generation Application

Apr 2019

- Produced novel javascript application to generate star trails of starry sky picture.
- Final product accomplished using graph cut, homographies, and maximal blending

Panoramic Stitching Application

February 2019

- Created javascript panorama stitching application to stitch 3 images together using manually selected features

Camera Calibration and Fundamental Matrix Estimation with RANSAC

Oct 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

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

Relevant Coursework

MS Electives Computer Vision, Computational Photography
Machine Learning, Machine Learning Theory, Deep Learning
Robotic Intelligence: Planning, Big Data Ethics

CS Core Graduate Algorithms, Introduction to Database Systems, Algorithm
Implementation, Data Structures, Discrete Math Structures, Formal
Methods, Systems Software, Computer Organization

Engineering Digital Logic, Embedded Systems & Microcontrollers, Microelectronic
Circuits, Signals & Systems Analysis, Mobile Computer & IoT