Nathaniel Todd

Objective: Seeking Position as Computer Vision Engineer Starting Summer 2020

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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, Tensorflow, OpenCV, Git
Iot/Developer Tools: Raspberry Pi, Arduino/Microcontrollers, Jetson TX2/Xavier

Extra-Curricular

Georgia Tech Salsa Club
Vice President | Instructor
• Organized classes and hired instructors
• Engaged club in Georgia Tech community with various networking events

K.I.D.S. Workshop
Volunteer Instructor
• Taught children basic programming

BIG Idea Competition
Team Cashout
• Pitched Cashout to investors
• Collaborated with mentorsto refine our product
• Developed basic web and android app to expedite store checkout

Pitt Robotics Club
Team IARC
• Developed logging and image processing ROS nodes
• Designed prop thrust testing software and rig

Experience

Software Engineer, Georgia Tech Research Institute **Aug-Dec 2019**
• Developed production code for android app
• Handled tasks related to USB and UDP communication and GUI development

Computer Vision Intern, Bloomfield Robotics **May-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

R&D Engineering Co-op, ABB Inc. **Jan-Dec 2017**
• Lead engineer on an end to end design upgrade of a legacy board
• Performed circuit design and 10 layer PCB design/layout
• Programmed in C and VHDL for software redesign
• Finalized development with prototype testing, sourcing, and placing manufacturing orders

Electrical Engineering Co-op, General Electric **May-Aug 2016**
• Worked on design and configuration of drive control software
• Assisted with on site motor drive installation and commissioning

Owner, Mow'n'Go **Apr'13-Aug'15**
• Grew through canvasing and advertisement
• Personally managed customer relations and work schedule
• Managed 2 employees and contracted others as needed
• Performed all mechanical maintenance and repairs

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 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