

ABOUT

I am currently a senior, majoring in computer engineering with minors in robotics, computer science, and applied math/statistics. I am primarily interested in opportunities in engineering to gain experience with real-world applications. I enjoy working with robots and computers and conducting research. From my previous work, I have learned how to tackle challenging problems and find solutions to them.

EDUCATION

Johns Hopkins University

August 2014–present

Graduating in May 2018

Whiting School of Engineering: Computer Engineering Major, Robotics Minor, Applied Math and Statistics Minor, Computer Science Minor; Cumulative GPA: 3.13, Upper-Division GPA: 3.31; Dean's List Fall 2016

- Robotics Club
- Institute of Electrical & Electronics Engineers (Vice President)
- Association for Computing Machinery
- Blue Key Society (campus admissions representative)

John A. Ferguson Senior High School

August 2010–June 2014

International Baccalaureate Diploma Program, GPA: 4.000, 8.033 (weighted)

- Top 1% of class of 1050 students and Summa Cum Laude.
- Earned the IB Diploma and AP Scholar with Distinction. President of STEM club, Vice President of Math Honor Society.

SKILLS

Programming Languages

C/C++, Python, Matlab, VHDL, C#, Java, HTML & CSS

Programming Skills

Robot OS (ROS), OpenCV, PyTorch, scikit-learn, Version Control (Mercurial, Git), Machine Learning

Engineering Skills

FPGA Synthesis (VHDL), Arduino (Uno, Due, etc.), PCB Design (Eagle), LTSpice, Electronics Lab equipment, Soldering

Selected Coursework

Computer Vision, FPGA Lab, Robot Sensors/Actuators, ML: Deep Learning, Algorithms for Robotics, Electronics/Circuits

Other Skills

Research (scientific/engineering), Technical and Creative writing/Proposal writing, Presentation, Teamwork, Carpentry

EXPERIENCE

JHU Laboratory for Computational Sensing and Robotics: Autonomous Systems, Control, and Optimization Lab

September 2016–present

Undergraduate Research Assistant

- Installed newer components including flight control systems, guidance, and computers on drones for motion/planning research.
- Researched and implemented motion-based teleoperation for a robotic arm attached to a drone for use in object manipulation.
- Implemented first person view teleoperation for aerial object manipulation.

Florida International University: School of Computing and Information Science

May 2017–August 2017

Undergraduate Research Assistant at NSF/DoD Funded Research Experience for Undergraduates (REU)

- Applied advanced statistical techniques such as principal component analysis to improve hyper parameter selection for use in augmented terrain-based navigation by robots.
- Developed a method for assigning weights to water parameters while reducing correlation.
- Used these selection and weighting techniques to develop an algorithm for reducing autocorrelation to create combined parameter data maps for underwater localization.

PROJECTS - more details and links to repositories/papers on my website (theshwin.com)

Computer Vision Projects

- 1) Augmented Webcam Experience
- 2) Face matching

- 1) Developed an augmented webcam experience using finger and face detection/tracking and implemented face filters/overlays depending on gestures in the video feed in real-time.
- 2) Implemented Siamese networks to recognize facial similarity between pairs of faces using PyTorch.

Robot Sensors/Actuators

Bluetooth-controlled, obstacle-avoiding car

Built a small robotic car that used ultrasonic sensors to detect and avoid obstacles. Implemented a bluetooth module and programmed bluetooth control of the car to have autonomous and manual modes.

FPGA Synthesis Lab

Logic Analyzer/Frequency Meter

Implemented an FPGA-based logic analyzer that could be used as a USB oscilloscope/picoscope. Implemented a frequency meter that counted the frequency of inputted signals.