# ASHWIN BHAT

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## 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-May 2018

**Whiting School of Engineering**
**Major: Computer Engineering; Minors: Robotics, Applied Math and Statistics, and Computer Science**
**Cumulative GPA: 3.21, Upper-Division GPA: 3.43; Dean's List: Fall 2016, Spring 2018**

- Robotics Club
- Institute of Electrical & Electronics Engineers (Vice President)
- Association for Computing Machinery

**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

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|---|---|
| **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-May 2018

**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.