

# ASHWIN BHAT

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## ABOUT

I am currently a senior, majoring in computer engineering with minors in robotics and applied math/statistics. I am primarily interested in opportunities in science and engineering. I enjoy working with robots and computers and conducting research. From my previous work, I have learned how to come up with creative strategies. I enjoy tackling challenging problems and finding 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: on a design team building an ornithopter (aircraft with flapping wings)
- Institute of Electrical & Electronics Engineers (webmaster)
- 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

Robotic OS, OpenCV, Deep Learning, Artificial Intelligence, Real-time OS, PyTorch, Version Control (Mercurial, Git)

### Engineering Skills

FPGA Synthesis (VHDL), Arduino (Uno, Due, etc.), Computer-Aided Design, Electronics Lab equipment, Soldering

### Selected Coursework

Computer Vision, FPGA Lab, Robot Sensors/Actuators, Algorithms for Sensor-Based 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

### 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.