# Ashwin Bhat
## Computer Engineer

📞 (305) 878-1762 | ✉ bhat.ashwin03@gmail.com | 🏠 theshwin.com | ⊙ The-Shwin | in abhat4

## Education

**Johns Hopkins University** *Baltimore, MD*
Bachelor of Science in Computer Engineering *May 2018*
- IEEE (Vice President of Student Chapter), Robotics Club, Association for Computing Machinery
- **Selected Coursework:** Computer Vision, Data Mining, Deep Learning, Algorithms for Sensor-Based Robotics, Data Structures, Computer System Fundamentals, FPGA Lab, Electronics Design, Intro to VLSI, Analog Circuits, Digital System Fundamentals, Renewable Energy Engineering

## Skills

| | |
|---|---|
| **Languages** | Python, C, C++, Matlab, VHDL, HTML & CSS |
| **Software Libraries** | OpenCV, scikit-learn, PyTorch, numpy, pandas, Robot Operating System (ROS), Gazebo |
| **Software Tools/Misc.** | Git, Jira, Bitbucket, Confluence, Ubuntu, Linux command-line, Qt Creator, Eclipse IDE, Jama |
| **Electrical** | PCB Design, Soldering, Circuit Analysis, FPGAs, Lab Equipment: Oscilloscope, Function Generator, Multimeter, etc. |
| **Other Skills** | Research, Technical Writing, Proposal Writing, Presentation, Teamwork, Leadership |

## Experience

**Galen Robotics** *Baltimore, MD*
Software Engineer/Lead Electrical Engineer *May 2018 - PRESENT*
- Programming sensor-based error checks, robot kinematics, frame transformations, and motion trajectory constraints in C++ for surgical robot platform. Writing software for eventual product release.
- Writing test scripts in Python to measure error and validate recorded data. Creating electrical unit and verification tests.
- Designing (in Eagle), building, and testing printed circuit boards (PCBs) and RFID antennas in electrical subsystems for robot.
- Supervised team of electrical eng. interns. Implemented an iterative design process for electronics work with issue tracking.

**Johns Hopkins University: Laboratory for Computational Sensing and Robotics** *Baltimore, MD*
Undergraduate Research Assistant *Sept. 2016 - May 2018*
- Researched and implemented motion-based teleoperation for a robotic arm attached to a drone for application in aerial object manipulation using the Razer Hydra game controller, C++, and ROS.
- Implemented first person view teleoperation for aerial manipulation and installed flight control systems/components on drones.

**Florida International University: School of Computing and Information Sciences** *Miami, FL*
Undergraduate Research Assistant, NSF/DoD Funded REU *May 2017 - Aug. 2017*
- Applied advanced statistical techniques to improve hyper parameter selection in augmented terrain-based navigation by robots.
- Used selection and weighting techniques to develop an algorithm for reducing autocorrelation to create combined parameter data maps for underwater localization. This algorithm achieved greater accuracy for localization.
- Developed software implementations of algorithm in Python and Matlab. Tested algorithm on historic data.

## Projects

**Augmented Webcam Experience**
Computer Vision Course
- Developed a webcam experience that used finger+face tracking on real-time video to apply filters over the users face (MATLAB).
- Made filters select-able by the user depending on the number of fingers being held up in video. Filters changed in real-time.

**Bluetooth Obstacle Avoiding Robot Car**
Robot Sensors/Actuators Course
- Built a small robotic car that used ultrasonic sensors and an Arduino to detect and avoid obstacles autonomously.
- Integrated a Bluetooth sensor to enable wireless communication via phone to control car. Programmed in Arduino IDE.

**Electronic Tracking for Earth Movers**
Advanced ECE Team Project Course
- Implemented Kalman filter based noise reduction of Bluetooth sensors to reduce error in predicting location of Bluetooth beacon that would be placed on construction worker around the earth mover.
- Created a position zone (estimated position of worker) and used weighted readings to reduce hysteresis seen by user in proof-of-concept of tracking system. Prototyped in MATLAB.