

Sohan Vichare

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OVERVIEW

Self-starter, quick-learner, hardworking high school senior passionate about the intersection between robotics, computer vision, and design. I spend my free time coding, tinkering in our schools “roboshack,” or rehearsing for an upcoming play/musical.

PROJECTS

Software Intern, NASA AMES Research Center, Mountain View, CA June to September 2017

Developed a neural network for person detection within thermal images. Interfaced between multiple FLIR Thermal cameras and a modified 3DR Iris drone. Worked on gun detection in thermal images. Gained understanding of smoothing techniques, thresholding, and polygon outline and analysis in addition to refining skills developing neural networks.

Software Intern, Airphrame; San Francisco, CA June to September 2016

Built a platform to automate Pix4D processing jobs across ten dedicated computers in Scala, Typescript, and PowerShell. Fixed bugs in Typescript frontend and Scala backend. Wrote script that checked flight safety against terrain data. Modified landing code to optimize aircraft landing speed and remove unneeded/dangerous waypoints.

Hawkeye: Unmanned Search and Rescue Missions through Intelligent Drones

Guided by Computer Vision and Dynamic Pathfinding July 2015 to March 2016

Assembled an autonomously controlled 3DR Y6 drone, modified to hold a Raspberry Pi and Camera with the capability to identify and count people from above and guide these people to previously designed “safe” location. Implemented the D*Lite pathfinding algorithm in C++ and Python (based on this paper <http://idm-lab.org/bib/abstracts/papers/aaai02b.pdf>). Used algorithm’s fast-replanning capabilities to guide a drone in an unfamiliar and dynamic environment. (Project link: <https://github.com/sohanvichare/AutoDrone>) 1st Place Winner in Mech. Engineering @ Synopsis Science Fair Silicon Valley & 4th Place Winner @ California State Science Fair.

SwiftAssist: Crowdsourcing Emergency Response January 2016

iOS, Pebble watch, and web application that crowdsources emergency response to try and help a person in an emergency before 911 can by notifying people in the general vicinity. Worked with a team of three other coders to prototype and build in a period of 24 hours. Built iOS app in Swift & Objective-C. Worked on Node.js backend. Winner @ Los Altos

Hacks. (Project link: <https://devpost.com/software/swiftassist-j6r9s2>) (Github: <https://github.com/sohanvichare/SwiftAssist>)

EXPERIENCE

Computer Vision with OpenCV

Build Raspberry Pi/Pi Camera based realtime ball tracking system for the Cupertino High School Robotics team. Wrote code that finds and aligns robot to reflective tape. Worked on realtime person detection code using a self-trained classifier

Drones

Assembled a 3DR Y6 drone. Built another custom camera drone from parts under \$100. Wrote companion computer code to interface with Pixhawk via MAVLink for autonomous control of drones.

iOS and Web development

Experience in iOS (Swift and Objective-C) and Web (Typescript, AngularJS, Ionic Framework). Self-taught. (Github: <https://github.com/sohanvichare>)

AWARDS

1st Place Mechanical Engineering @ Synopsis Science Fair

4th Place in Computer Science @ California State Science Fair

6th Place Nationally in Extemporaneous Debate @ NSDA Nationals 2016

Winner @ Stanford Health++ Hackathon (<https://devpost.com/software/dermyx>)

Winner @ Los Altos Hacks (<https://devpost.com/software/swiftassist-j6r9s2>)

Winner @ BASEHacks (<https://devpost.com/software/robovision>)

California Arts Scholar - 2015

Stanford ProCo Computer Science Competition Special Round 1st Place Winner

Association of Computational and Math Modeling Gamma Prize Winner (top 15%) - 2015