

Abhinav Gupta

Junior Year Computer Science Undergraduate at IIIT, Hyderabad
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EDUCATION

IIIT, HYDERABAD

B-TECH (HONOURS) IN COMPUTER
SCIENCE AND ENGINEERING
Expected May 2021
Hyderabad, India

INDIAN SCHOOL MUSCAT

Central Board of Secondary Education
Graduated May 2017
Muscat, Oman

SKILLS

PROGRAMMING

Proficient and Experienced in:

C • C++ • Python3

Familiar with:

MATLAB • JavaScript • SQL • HTML •
CSS • Golang • Flask • Bluespec

SOFTWARE AND TOOLS

OpenCV • ROS • TensorFlow • PyTorch •
Linux • Bash • Open3D • ReactJS •
OpenGL • Neo4J • \LaTeX

COURSEWORK

UNDERGRADUATE

**Pursuing in Spring '20*

Mobile Robotics
Statistical Methods in AI
Computer Vision*
Optimization Methods*
Machine Learning*
Operating Systems
Artificial Intelligence
Data Structures and Algorithms
Computer Networks
Digital Signal Processing
Database Systems

ACHIEVEMENTS

- Perfect scores (800/800) on the SAT Subject Tests (Physics, Chemistry and Mathematics)
- Finalist, Listen Up! Elocution, The Muscat Daily, 2014
- President, The Music Club, IIIT, Hyderabad
- Freestyle Swimmer, CBSE Oman Clusters, 2015

EXPERIENCE

ROBOTICS RESEARCH CENTER | COMPUTER VISION RESEARCHER

May 2019 - Present | IIIT, Hyderabad | Advisor: Prof. Madhava Krishna

- Currently working on a visual servoing problem by learning depth and extracting the egomotion from images, **aimed for publication for IROS 2020.**
- Trained the popular 'YOLO' object detection algorithm on a hand-labelled dataset of door images collected from Facebook's habitat.
- Worked on the automation of a drone for outdoor environments by visual odometry using real time SLAM frameworks, implemented on ROS.

THE VIRTUAL LABS | SOFTWARE ENGINEERING AND RESEARCH INTERN

August 2018 - January 2019 | VLEAD, Hyderabad, India

- Developed full fledged experiments and interactive artefacts in JavaScript and Python for various data structures and algorithms at The Virtual Labs, a social initiative of the Government of India.

IIIT, HYDERABAD | TEACHING ASSISTANT

August 2019 - Present | Advisor: Prof. Aftab Hussain

- Teaching the principles of digital logic and the architecture of a processor to 300 students, as part of the Digital Logic and Processors course offered at IIIT, Hyderabad.

MAJOR PROJECTS

STEREO RECONSTRUCTION | COMPUTER VISION

- Generated a dense 3D point cloud reconstruction of a scene from stereo images by generating disparity maps for each stereo pair and implemented an iterative PnP algorithm to recover the pose.

EKF-SLAM | MOBILE ROBOTICS

- Estimated the 2D pose and trajectory of a robot using sensor measurements from a wheel odometer and laser rangefinder, by applying an Extended Kalman Filter.

VISUAL ODOMETRY | COMPUTER VISION

- Implemented a monocular visual odometry algorithm from scratch, to recover the trajectory of the drone using a sequence of images and implemented the 8-point algorithm within a RANSAC scheme.

FACE CLASSIFICATION | MACHINE LEARNING

- Trained various learning models on a dataset of real and animated face images by applying different feature transformations and analysed the classification results.

NOUGHTS AND CROSSES: AI BOT | ARTIFICIAL INTELLIGENCE

- Built a bot for 3*3 Tic-Tac-Toe board, further divided into more 3*3 blocks using Minimax algorithm with an optimal heuristic function.

LINUX SHELL | OPERATING SYSTEMS

- Implemented a Linux Bash shell, a command line interpreter in C. Supports many bash commands with piping, redirection, foreground and background processing.