

Shubh Agrawal | Curriculum Vitae

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Education

- **Indian Institute of Technology (IIT), Kharagpur, India** **8.97/10.0 (Current)**
B.Tech + M.Tech (Dual Degree), Fifth Year Mechanical Engineering 2014-2019 (expected)
- **Narayana Junior College, Hyderabad, India** **Aggregate 98.00%**
Grade 12 Certificate, Andhra Pradesh Board of Education 2012-2014
- **St. Aloysius School, Yavatmal, India** **Aggregate 95.45%**
Grade 10 Certificate, Maharashtra Board of Education 2012

Publications

- **DeepVO: A Deep Learning approach for Monocular Visual Odometry**
Preprint on arXiv has 11 citations since November 2016. Limitations in algorithm were further resolved as part of the B.Tech project.
- **Low Cost Autonomous Navigation and Control of a Mechanically Balanced Bicycle with Dual Locomotion Mode: [15ITEC-0224]**
Published in IEEE Transportation Electrification Conference 2015, India. Patent application filed.

Internships

- **Tonbo Imaging Pvt. Ltd.** **Bangalore, India**
Engineering Intern May'18–July'18
- **Blue Vision Laboratories** **London, UK**
Research Engineering Intern May'17–July'17
- **Rehabilitation Robotics** **IIT Kharagpur, India**
Student Assistant - Hardware Developer and Programmer May'16–August'16
Guide: Prof. Dilip Kumar Pratihar, Department of Mechanical Engineering

Thesis

- **Survey, Design and Analysis of Path Tracking Methods for High-speed Mobile Robots [Ongoing]**
Guide: Prof. Ranjan Bhattacharya, Department of Mechanical Engineering
- **Monocular Visual Odometry for Autonomous Agents towards Mapless Navigation using Spatio-Temporal Neural Networks** **Aug'17–March'18**
Guide: Prof. Debdoot Sheet, Prof. Dilip Kumar Pratihar

Projects

- **Autonomous Ground Vehicle (AGV) Research Group** **IIT Kharagpur**
***Current:** Team Lead **Past:** Perception, Control Systems developer* March'15–Present
Guide: Prof. Debashish Chakravarthy, Department of Mining Engineering
- **Autonomous Drone for Warehouse Inventory Management** **IIT Kharagpur**
Problem statement by Honeywell Technology Solutions Sept'17–Dec'17
- **Retina² : Remote Monitoring System for Adults and Visually Impaired** **IIT Kharagpur**
Software and Hardware Developer June'16–March'17
- **Music Harmonization using Neural Networks** **IIT Kharagpur**
Machine Learning Term Project Aug'16–Nov'16

- **Movie Posters Evolution Analysis** **IIT Kharagpur**
Aug'16–Nov'16
Visual Communications Term Project
- **i-Bike: Low-Cost Autonomous Bicycle with Dual Locomotion Mode** **IIT Kharagpur**
Jan'15–March'16
Electronics and Perception Team Member

Achievements

- **Inter-IIT Tech Meet (National level)** **IIT Madras**
January 2018
First position; Built a drone for warehouse automation, inventory check & management
- **Analog Device' Anveshan IoT Fellowship (National level)** **Bangalore**
April 2017
Finalist; Received a funding of INR 100k for developing an IoT product for visually impaired
- **Inter-IIT Tech Meet (National level)** **IIT Mandi**
January 2016
First position; Developed a voice controlled personal assistant robot
- **KPIT Sparkle'16 (National level)** **COEP, Pune**
January 2016
First position; Demonstrated an intelligent autonomous bicycle for public sharing, i-bike
- **ASME SDE Kshitij'16 (National level)** **IIT Kharagpur**
January 2016
Second position; On spot hardware modeling event.
- **IEEE Hardware Hackathon (University level)** **IIT Kharagpur**
August 2015
Second position; Developed an adult health monitoring system
- **Inter-Hall hardware modeling (University level)** **IIT Kharagpur**
April 2015
First position. Built a vehicle for partially disabled people.
- **NASA Ames Space Settlement Design Contest** **High School**
March 2012
Position in top 50 honorary mentions by NASA all over the world.

Technical skills

- **Languages:** Python, C++, MATLAB
- **Deep Learning Libs:** Keras, Caffe, TensorFlow
- **Software Skills:** Robot Operating System (ROS), OpenCV, OpenMVG, PCL, Qt Creator
- **Platforms:** Raspberry pi, Arduino, AWS (Amazon Web Services)
- **Robotics:** Autonomous Systems, Computer Vision, Control Systems
- **Others:** Regular user of Linux, Git and Docker

Relevant Courses

- Deep Learning, Machine Learning, Programming and Data Structures, Algorithms-1, Flight Vehicle Controls, Modern Control Theory, Non-linear and Adaptive Control, Mechanisms and Robot Kinematics

* hyperlinks are available at appropriate locations * Detailed resume and references available upon request