

Ayush Goel

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EDUCATION

Thapar Institute of Engineering and Technology **Punjab, India**
B.E. in Mechatronics Engineering (CGPA: 9.29/10) *June 2018*

- **Awards:** Certificate of Merit for 3 consecutive years
- **Achievements:** 3RD rank in Undergrad, Merit-based Scholarships for all 4 years

Lancer's Convent **Delhi, India**
High School (Percentage: 91.6%) *March 2014*

RESEARCH EXPERIENCE

Programme in Autonomous Robotics, IIT Delhi **Delhi, India**
Research Intern *Jan. 2017 - July 2017*

- Developed a mobile robot capable of moving autonomously in a pre-defined path or being operated remotely. [\[Report\]](#)
- Worked on CAD design, stress analysis, component selection, Odometry, PID control, and GUI development of the robot. Developed and installed a 4 degree-of-freedom Robotic Arm with a payload capacity of 300 gm.
- **Tech stack:** Python, OpenCV, MATLAB, ROS, Gazebo, Solidworks, Proteus

WORK EXPERIENCE

Unicommerce eSolutions Pvt. Ltd. **Gurugram, India**
Senior Software Development Engineer *Aug. 2019 - Present*

- Responsible and decision-maker of critical deliverables for high & low-level design changes and ensuring robust end-to-end architecture of the platform.
- Mentored and managed a team of Software Engineers and ensured shipping of high-quality products and services, thereby fulfilling 80% more business requirements per sprint.
- Reduced cost of infrastructure by redesigning integrations for optimal bandwidth utilization. Researched and experimented with residential and datacenter proxies by implementing load distribution, IP-rotation, and fallback to achieve a 25% reduction in costs.
- Spearheaded integration of International marketplaces like Lazada and Shopee, establishing the company's presence in 7 middle-eastern regions.
- **Awards:** Above and Beyond Call of Duty (ABCD) Award [\[Certificate\]](#)
- **Tech stack:** Spring Boot, Java, Mongo, SQL, Zookeeper, ActiveMQ, Elastic Search, AWS

Capgemini India Pvt. Ltd. **Maharashtra, India**
Senior Software Engineer *Sept. 2018 - June 2019*

- Upgraded the financial services-web application of CIMB Bank, Malaysia by developing a banking project in a team of 10 to convert SOAP APIs to REST APIs.
- Planned and headed the development of Capbook, a social media web application developed using AngularJS and Spring Framework, used by over 500 employees.
- **Tech stack:** Spring, AngularJS, Java, REST, Yaml, Swagger

LEADERSHIP EXPERIENCE

Mechatronics and Robotics Society, TIET **Punjab, India**
Convener *Aug. 2017 - June 2018*

- Secured an additional Rs. 60,000 funding for the society and bought several new components.
- Organized several robotic workshops and events, with an average footfall of over 500 people.
- Founded a competition, INNOVATICA, where around 25 student groups presented ideas to solve real-life problems and I helped them implement those.
- Responsible for society's finance policies, procedures, and controls.

PROJECTS

Object Following Robot using ROS and OpenCV

Aug. 2019

- Developed a Raspberry Pi-based robot that chases an object using PID control and a combination of sensory data (Camera and LiDAR). [\[Github\]](#)
- Created a ROS package with three python scripts; one for detecting the centre of the object being tracked from images from Raspberry Pi; second for publishing angular position using LiDAR and camera data; third for sending appropriate velocity values to the actuators.

Development of Service Robot

Aug. 2017 - Apr. 2018

- Developed and installed a 4 degree-of-freedom Robotic Arm with a payload capacity of 300 gm on RoboMuse3XT. [\[Poster\]](#)
- Implemented the ROS Navigation Stack to map the surrounding environment.
- Implemented Pattern Recognition to identify different medical equipment and developed an Android application to recognize the voice commands.

Development of Semi-Autonomous Mobile Robot (RoboMuse3XT)

Jan. 2017 - July 2017

- Developed a Semi-Autonomous mobile robot from scratch capable of being operated remotely or autonomously in a pre-defined path. [\[Video\]](#)
- Incorporated the capabilities of live video surveillance and face recognition to enhance security.
- The robot is cheap and flexible, and has implementations in several domains: surveillance, industries, research.

Image Projection

July 2017

- Implemented the concepts of Projective Geometry and Homography to project an image onto a scene in a natural way that respects perspective. [\[Video\]](#)
- Used Tracking and Pose Estimation to implement a simple augmented reality application.

TECHNICAL SKILLS

Languages: C, C++, Python, Java, MATLAB, JavaScript, 8081 and 8051 Assembly Programming

Operating systems: Linux, Windows, Unix

Software: VCS (Git), ROS, Gazebo, Solidworks, MATLAB, Android Studio, Keil uVision, Proteus

Libraries: OpenCV, PyTorch, Sklearn, NumPy, pandas, Matplotlib

Hardware: RaspberryPi, Cameras, NVIDIA Jetson, Arduino, PLC, Sabertooth, Kinect

EXTRA-CURRICULAR ACTIVITIES

- Convener, Mechatronics and Robotics Society, TIET, India.
- Member of Organizing Committee, 3RD International Conference on Advances in Robotics held at IIT Delhi.
- Volunteer, Apna Ghar Vridh Ashram - senior citizen's home on the outskirts of Delhi, India.
- Volunteer, Pratigya Society - provided elementary knowledge to underprivileged children.
- Volunteer, SIYAAHI - an initiative towards environment protection, TIET, India.
- Founded a competition, INNOVATICA, to encourage robotics research in college, TIET.
- Participated in several inter-organization cricket tournaments, Capgemini, India
- Participated in Tryst - Technical Fest, IITD, India

RELEVANT COURSEWORK

Undergraduate Courses: Control Systems, Advanced Control Systems, Robotics Engineering, Signals and Systems, Digital Signal Processing, Kinematics and Dynamics of Machines

Self-learned: Autonomous Mobile Robots ([edX](#)), Robotics Specialization ([Coursera](#)), ROS for Beginners: Basics, Motion and OpenCV ([Udemy](#)), ROS for Beginners II: Localization, Navigation and SLAM ([Udemy](#)), Machine Learning ([Coursera](#)), Machine Learning A-Z™: Hands-On Python & R In Data Science ([Udemy](#)), Python For Everybody Specialization ([Coursera](#)), Image Processing and Deep Learning ([PyImageSearch University](#))