PRANJAL PAUL

M.Tech. Automation & Robotics Engineering

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QUALIFICATION

Course	Institution	Board/University	Percentage/GPA	Year of passing
M.Tech. Automation and Robotics	University of Petroleum and Energy Studies, Dehradun	UPES, Dehradun	8.97	2019-2021 (Pursuing)
B.E. Electronics and Telecommunication	Bhilai Institute of Technology, Durg	CSVTU, Bhilai	8.31	2017-18
10+2	Delhi Public School, Raipur	CBSE	73%	2014
10th	Delhi Public School, Raipur	CBSE	8.6	2012

CERTIFICATES

- Deep Learning for Computer Vision by NPTEL (enrolled)
- Autonomous Mobile Robots from ETH Zurich offered by edX
- Introduction to Deep Learning by MIT OpenCourseWare (MIT 6.S191)
- Computer Vision Essentials by Great-Learning
- Mathematics for Machine Learning offered by Coursera
- Robotics: Aerial Robotics offered by Coursera
- Robotics: Computational Motion Planning offered by Coursera
- ROS courses by Udemy

TECHNICAL SKILLS

Language:	ROS, Python, C++, C, Embedded C, MATLAB, Flask, HTML, PHP, CSS, Bootstrap, Django, Spark, Docker, Verilog, VHDL
Boards:	Nvidia Jetson Nano, Raspberry Pi, Arduino, ESP32, LPC2148 ARM 7, FPGA
Simulator:	Gazebo, CARLA, V-rep, Rviz, RTab-Map, Simulink, Unity
Software / IDE:	Fusion 360, Blender, VS Code, PyCharm, Sublime, Arduino IDE, VNC, Proteus, LabView
Cloud Platform	AWS, Google Cloud, Microsoft Azure, IBM Watson
Version Control:	Git
Desktop OS:	Linux (Ubuntu, Kali, Manjaro), Windows

PROJECTS

- **Visual Mapping and Visual Odometry for Warehouse environment** (M.Tech. Thesis)

  The objective is to create a 3D map of warehouse environments to perceive complex unreachable spaces and also, get an idea of storage areas. The research involves extensive study of various AR/Computer Vision algorithms (SIFT, SURF, ORB, FAST, BRISK) along with development of Deep Learning algorithm (R-CNN) for feature extraction.

- **Search and Rescue Operation in a disaster affected area** (Current)

  Quadrotor will traverse in an unknown environment generating 3D map using RGBD sensor and would search for victims. As soon it finds, it will communicate to the mobile robot for rescue operation. Deep Learning algorithm for victim detection and Hector SLAM is used.

- **Face Tracking using DJI Tello** (Jan 2020-Mar 2020)

  Applied ORB algorithm (OpenCV) for face tracking and PID Control on DJI Tello.

- **Fresh and Decayed Fruit Classifier using CNN** (Oct 2019 – Feb 2020)

  A Convolutional Neural Network based fruit quality classifier that separates them as fresh or decayed based on their geometrical features like size, shape, colour, texture. The model reaches 94% accuracy for test data and uses flask for the deployment.

- **Self-Driving Car based on Lane Detection** (Dec 2019 – Jan 2020)

  The car moves at the centre of tracks having white lanes. When it detects the lane end, it takes a U-turn and goes back to the starting place. It is built on Arduino and Raspberry Pi 4 with Pi camera and obstacle avoidance. Additionally, it recognizes traffic signals.

- **ML based Line follower built for visually-impaired people** (June 2017 – Sep 2018)

  The special abled person is guided towards the respective hospital ward based on bluetooth input. It drives using RFID with line following with the application of machine learning. Laser Stop-Detection was the further modification made over RFID for precise stop-detection.

PUBLICATION

- Pranjal, G. Venkata and Arpit J. (under review) "*Path planning and Optimization*". Opportunities and Challenges in Internet of Things and Cyber Physical Systems. Apple Academic Press (2020).
- Pranjal, Abhishek S. (under review) "*A comprehensive review on navigation system, design and safety issues for autonomous vehicle development*". ADDAS-1: Autonomous Driving and Driver Assistance System. CRC Press (2020).

ACHIEVEMENTS

- Participated in e-Yantra 2020 conducted by IIT Bombay
- Winner in Hackathon conducted by Effcon Company, Raipur in the year 2018
- Qualified GATE (EC) in the year 2018
- Secured 2nd position in Biped Robot Mega Competition organised by Robokart in association with Innovation Cell UMIC, IIT Bombay in the year 2017
- Awarded Distinction in Australian Chemistry Olympiad in the year 2011

ACTIVITIES AND SOCIETIES

- Google Developer Group Member
- Attended seminar on Node-JS conducted by Texas Instruments in the year 2016.
- Attended workshop on Internet of Things conducted by Blue Banyan in the year 2015
- Attended seminar on BITCON conducted by BIT, Durg in the year 2015
- Volunteered National Board Accreditation Project Exhibition at BIT, Durg
- Volunteered Induction Program at BIT, Durg
- Co-ordinated Debate Competition at DPS, Raipur

SOFT-SKILLS

- Adaptive
- Collaborative
- Conflict Management
- Communicate with cross-functional team
- Positive Reinforcement

INTERESTS

- Computer Vision
- Machine Learning and Data Science
- Aerial Robotics
- Swarm Algorithms
- Image Processing and Cognitive Learning
- Robot Simulation
- Localization and Mapping

LINGUISTIC PROFICIENCY

- English – Full Professional Proficiency
- Hindi – Professional Working Proficiency
- Bangla – Full Professional Proficiency