

SAIRAJ RAJENDRA LOKE

cse210001035@iiti.ac.in | + 91 9372679958 | [Website](#) | [Github](#) | [LinkedIn](#)

EDUCATION

Degree/Certificate	Institute/Board	CGPA/Percentage	Year
B.Tech.	Indian Institute of Technology Indore	8.67 (Current)	2021-2025
Senior Secondary	HSC (grade 12)	94.67%	2021
Secondary	SSC (grade 10)	95.00%	2019

EXPERIENCE

- **Siemens, India** | *3D Reconstruction Intern* Dec.24 - Present
 - Working on 3D reconstruction of real indoor warehouse objects and scenes based on multiple view image captures and their interactions within the AirSim simulator.
- **Environmental Robotics Lab(ERL) - ETH Zurich** | *Computer Vision & Robotics Intern* Aug.24 - Nov.24
 - Developed a Scene Flow(3D Optical Flow) based algorithm to estimate the loading capacity score of tree branches and associated uncertainty in the estimates, utilizing data from a downward-facing RGBD camera mounted on a hovering drone to be used for sensor deployment.
 - Paper, Presentation
- **Autonomous Robots Lab(ARL) - NTNU** | *Robotics Research Intern* Oct.23 - Jul.24
 - Developed a custom ROS wrapper for the HoloOcean simulator. This is being used for generating data in rosbag format and integrating the vehicle control with existing ROS packages. [Demo](#).
 - Worked on encoding depth information using beta-VAEs to be used for downstream underwater navigation tasks.
 - Achieved 500x compression ratio in depth representation with VAE's inference time of less than 1.6 milliseconds.
- **Big Data Lab - IIT Indore** | *Data Augmentation Intern* Jul.23 - Sept.23
 - Implemented traditional image augmentation techniques: rotations, blurring of different kinds, shadow, flares, and lot more, for 6 diseases + 1 healthy leaf class on existing 770 images to generate x9 times images to be used further.
 - Reviewed and used GANs for data augmentation, custom as well as models like CycleGAN.
 - Quality of generated images were qualitatively evaluated using perceptual studies.

PROJECTS

- **IITHub- Institute App** Jan. 23 – Apr. 23
Software Course Project, under Prof. Puneet Gupta, CSE, IIT Indore [Github](#)
 - Applied principles of incremental software development process, to design and build flutter and firebase-based mobile application from scratch targetted for IIT Indore community.
 - Features: student-professor project collaboration platform, automatic email categorization, campus news & map.
- **Python API for Controlling Drona Aviation's Pluto Drone (Bronze Medal)** Dec. 22 – Feb. 23
Inter IIT TechMeet 11.0, IIT Kanpur [Presentation](#) - [Certificate](#) - [Github](#)
 - Developed a comprehensive Python API based on multithreading and multiprocessing to achieve real-time performance for simultaneous vision and control processes. Established socket communication between the client computer and drone. Implemented waypoint navigation algorithm with visual feedback using ArUco markers.
 - Demonstrated hovering, waypoint navigation, localization, and drone swarm control utilizing the developed API.

TECHNICAL SKILLS

- **Programming Languages:** C++, Python, Bash, Dart*, SQL*
 - **OS & Platforms/Embedded devices:** Linux, RaspberryPi, Arduino
 - **Tools/Frameworks/Libraries:** Git, Github, PyTorch, OpenCV, ROS/ROS2, Singularity(HPC Containerization), Sockets, Flutter, Docker*, OpenMP*, Wireshark*, BOUML*, Gazebo(Classic + Ignition)*, HoloOcean
- * Elementary proficiency

KEY COURSES TAKEN

- **Mathematics:** Linear Algebra, Optimization, Numerical Approximations, Differential Equations, Basic Calculus
- **Computer Science and Engineering:** Computational Intelligence, Computer Networks, Operating Systems, Data Structures and Algorithms, Software Engineering, Parallel Computing, Database and Information System, Automata Theory & Logic, Computer Graphics, Compiler Techniques
- **Online Courses:** Fundamentals of Reinforcement Learning, Neural Networks and Deep Learning, Hyperparameter Tuning, Regularization and Optimization, [other Course Certifications](#).

POSITIONS OF RESPONSIBILITY

- **Chair IEEE- RAS**, Student Branch Chapter , IIT Indore- Prof. Trapti Jain (Advisor) Nov. 22 - Present
Discussions with industry professional on latest robotics developments, ROS workshops.[link](#)
- **Member, SIRC**,International Relations Team (Students' International Relations Cell) Dec. 22 - Present
- **Head- Autonomy Division**, [IVDC Club](#), IIT Indore, IGVC team - Autonomy lead. Apr. 23 - Apr. 24

ACHIEVEMENTS

- **ThinkSwiss Scholar 2024**,Scholarship for Fall 2024 internship at ETH Zurich 2024
- **Bronze Medal**, Inter IIT Tech Meet 11.0, IIT Kanpur 2023
- **Ranked 12th Internationally** , [Team NotABot](#) - [CoderOne](#) 2022
- **Gold Medal**, IIT Indore Summer of Code-Lidar Based Obstacle Avoiding Robot 2022
- **All India Rank 1219**, out of 151,000 Students, Ranked in Top 0.81 % Students, JEE Advanced 2021
- **KVPY Fellow | All India Rank (AIR) 165**,SX stream (12th Grade) 2021
- **NTS Scholar-NCERT**, (National Council of Education Research & Training) 2019