Soumo Roy

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Education

Vellore Institute of Technology (VIT) **Vellore, Tamil Nadu, India**
Bachelor of Technology in Electronics and Communication Engineering *July 2021 - May 2025*
CGPA: 8.83/10 **(Top 10% of the batch)**

Technical Skills

Programming Languages: Python, C++, MATLAB, LaTeX
Libraries and Tools: PyTorch, Sklearn, Pandas, Numpy, OpenCV, Git, Docker, Linux(Ubuntu)
Simulation Packages: ROS1, ROS2, Gazebo, RVIZ, MuJuCo, pybullet, OpenAI Gym
Boards: NVIDIA Jetson Nano(2 GB), Intel Atom, Arduino Uno, Raspberry pi 3b, STM32 black pill, blue pill, ESP32

Work Experience

Research Associate
IIIT Hyderabad, Telangana, India *January 2025 - present*
* Working under Dr Madhava Krishna at RRC (Robotics Research Center) at IIIT Hyderabad
* Implemented a path planner for an autonomous wheelchair for navigating in crowded environments using generative AI (VQ-VAE and PixelCNN) with a novel sampling optimiser which improved efficiency by 40% compared to state of the art learning based approaches.

SN Bose Summer Research Intern
NIT Silchar, Assam, India *June 2024 - July 2024*
* Worked under Dr Yogesh Singh at Advanced Robotics Research Lab, NIT Silchar
* Collaborated on a MATLAB simulation of shape memory alloy(SMA) based assistive robotic glove simulation for patients with wrist mobility issues, which reduced strain by 78%.

SURGE Research Intern
IIT Kanpur, Uttar Pradesh, India *May 2024 – July 2024*
* Guided by Dr. Tushar Sandhan and Mr. Prem Raj at Intelligent System Control Lab, IIT Kanpur
* Contributed to a human robot collaboration project using imitation learning with UR5 collaborative robot and Intel RealSense camera for the collaborative action of heavy object lifting with an efficiency of 68% compared to reinforcement learning approaches.
* Was one among 42 students selected under the institute project funded category at the IIT Kanpur

Robotics System Validation Intern
Unbox Robotics, Maharashtra, India *August 2023 – November 2023*
* Developed on a project to automate the testing of the web page used for controlling robots using webdriver.io and JavaScript, Docker and deployed it on GitLab CI/CD pipeline, which improved validation teams' testing efficiency by 20%.

Projects

- **Spoon feeder**, Implemented reinforcement learning algorithms (PPO, SAC and DDPG) across different manipulators simulating feeding and drinking tasks on OpenAI gym, which was published in IEEE INDICON-24 conference GitHub
- **Crowdsurfer-ROS**, Utilized generative AI with sampling optimiser for path planning for a mobile robot to navigate in a crowded environment with dynamic obstacles, won best bachelor thesis award for the project GitHub
- **Eyantra Robotics Competition (IIT Bombay)**, Navigated a mobile robot with the help of SLAM algorithms in a warehouse by detecting and localising the packages placed on racks, and manipulating the robotic arm to pick them up where we were among the top 5 performing teams to represent our college at IIT Bombay. GitHub

Publications

- **S. Roy**,J. Viju,B. Bhattacharya,"Adaptive Robotic Manipulator Simulation for Enhanced Feeding and Drinking Assistance", 21st IEEE INDICON-2024 DOI: 10.1109/INDICON63790.2024.10958301 Link
- S. Chowdhury,**S. Roy**, D. G. Chowdhury, S. Chakraborty, K. P. Jain, B. Bhattacharya, "SKIDS: An Object Classification and Smart Communication based Waste Bin", 3rd IEEE International Conference on Artificial Intelligence for Internet of Things (AIIoT-2024) DOI : 10.1109/AIIoT58432.2024.10574647 Link

Achievements

- Featured in Telengana state newspaper during R&D showcase 2025, and attracted more than 300+ visitors to our poster based on my bachelor thesis (link)
- Won a seed grant of **Rs 1.5 lakh ($1790)** from VIT faculty-student sponsored project fund for a medical assistive robot project under Dr. Budhaditya Bhattacharyya at Advance Digital Signal Processing Lab as a part of my final year project Link