Hirenkumar Vyas

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EXPERIENCE

Swaayatt Robotics | *Internship as Robotic Engineer.*   January 2024– April 2024

Skills: C/C++, python, Control system, ROS/ROS 2, Gazebo simulation, Mathematics, LQR, MPC, Linux

- Working on Autonomous vehicle control system, researching, formulating and designing control algorithms.
- Benchmarking over different control algorithm on gazebo simulation, LQR and MPC.

Ati Motors | *Internship as Robotic Engineer.*   June 2024– Dec 2024

Skills: C/C++, python, Control system, EKF, Industrial Robotics, Linux, Docker

- Optimized the whole robot safety pipelines to C++, reducing the computation, developed more sophisticated algorithm on existing safety modules, ensuring safety in operating space even there is loss of data.
- Optimization of safety algorithms for lower level controls, Modeling skid kinematics with EKF integration, fatal warning mechanism in C++, optimization in firmware.

Ati motors | *Autonomy engineer*   jan 2025 – current

Skills: Python, C++/C, firmware, MPC, localization, Docker, Production

- Developed and monitored path-tracking algorithms for deployment in production environments.
- Conducted R&D on Data-Driven MPC and adaptive control strategies capable of modeling complex vehicle dynamics using nominal models.
- Oversaw and enhanced robot safety algorithms in live warehouse settings to ensure operational reliability and safety compliance.

INTERNSHIP

GROOM | *Internship as Machine learning trainee*   Duration - 2 months

Skills: Annotation, Google Colab, Python, Scarping.
Collection of data through web scraping, Annotation, Training and Testing model on Google Colab.

DRM Mumbai | *Internship as Software Engineer.*   July 2023 - January 2024

Skills: Matplotlib, GIT, Python, Pyside, SLDC.
Developing software which automates the process of Data visualization of train with respect to time. Software fetch data from excel and creates a Master Schedule which is further used for addition or removal of any train.

RESEARCH WORK

Publication: *"Navigation Assistance for the Visually Impaired: An Image Segmentation-Based Web Application,"* Hirenkumar Vyas, Vivek Prajapati, et al., IEEE Xplore INDIACOM 2023 – https://ieeexplore.ieee.org/document/10112290.

Publication: *"Graph-based Named Entity Information Retrieval from News Articles using Neo4j,"* S. Chaudhary, H. Vyas, et al., 2024 11th International Conference on Computing for Sustainable Global Development (INDIACom), New Delhi, India, 2024, pp. 320–324, doi: 10.23919/INDIACom61295.2024.10499187. https://ieeexplore.ieee.org/document/10499187.

ACHIEVEMENT

AIR 1 at Solar Electric Vehicle Challenge (Sevc 2023)

Autonomous team lead - Developed and Implemented level 2 Autonomous system on SAE vehicle, showcase it on National level competition.
Business plan member - Developed and presented financial sheets and risk management strategy for the Business round.

AIR 2 at Saur Urja Vehicle Challenge (Suvc 2022)

Autonomous member - Researched and Improved perception and localization division for Autonomous car.

AIR 1 at Solar Electric Vehicle Challenge (Sevc 2022)

Autonomous member - Developed and Implemented an electronics system that bucks voltage from from high voltage battery source to low voltage load, deep learning model for obstacle recognition and machine learning approach for path planning Algorithm.

AIR 1 at Electric Solar Vehicle Championship 3000 (Esvc 3000)

Autonomous member - Implemented Autonomous system on constraint environment.

2nd Place among International Participants In Opencv 2022 Hackathon.

Lead member - Developed Advance perception for Autonomous cars on Road, using lane segmentation, Drivable area detection, Speed estimation and 3D object detection.

2nd Place in Vcet Oscillations Technical Paper Presentation.

Presented papers on novel approach using deep learning on how blind people can navigate through phone.

2nd Place in PRAGATI NATIONAL LEVEL BUSINESS COMPETITION 2023

Business plan member - Developed and presented a business plan for an Autonomous Solar Electric car manufacturing company.