HIMANSHU SAHNI

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EDUCATION

Chalmers University of Technology, *MS in Complex Adaptive Systems* | Göteborg, Sweden — Present

RV College of Engineering, *Bachelor of Engineering in Mechanical Engineering* | Bangalore, India — 2016 - 2020

Courses: Artificial Neural Networks | Stochastic Optimization Algorithms | Simulation of Complex Systems | Algorithms for Machine Learning and Inference | Design of AI Systems | Advanced Machine Learning with Neural Networks | Autonomous Robots | Constraint Programming and Applied Optimization | Distributed Systems

SKILLS

Languages	Python, MATLAB, C++, GO, SQL, Linux scripting, Latex
Tools/Frameworks	ROS, ROS2, Gazebo, GIT, Docker, Tensorflow, Keras, Pytorch, Scikit-Learn, AWS, Kubernetes, JIRA
Certifications	Generative Adversarial Networks (GANs), DeepLearning.AI TensorFlow Developer, Deep Learning Specialization, Machine Learning

EXPERIENCE

VOLVO Group, *Master Thesis Worker* | Göteborg, Sweden   Jan, 2024 - Present

- Developed and implemented agent-based architectures using open-source LLMs for analyzing industrial logged data, focusing on automating data analysis processes and enabling intuitive natural language interactions.
- Crafted and implemented advanced prompt engineering methodologies for complex data interpretation, reasoning, code synthesis, and visualization tasks.
- Collaborated with the team on the development and evaluation of the tool, using standardized and custom metrics to ensure accuracy, reliability, and effectiveness.

Chalmers University of Technology, *Teaching Assistant - Robotics Lab* | Göteborg, Sweden   Feb 2023 - Jul 2023

- Guided and instructed 6 bachelor students as a Teaching Assistant under Dr. Elad Schillar, focusing on ROS and indoor autonomous robot architecture, emphasizing motion planning algorithms.
- Implemented advanced algorithms (TAG Slam, Orb Slam3, Gmapping) on Wifibot for trajectory and map generation; integrated system with Gulliview local positioning system for comparative trajectory analysis.

Jetbrain Robotics, *Robotics Software Engineer* | Gurugram, India   Sep 2020 - Jun 2022

- Developed SLAM and motion planning algorithms for mobile robot autonomy, interfacing with sensors such as sonars, LIDAR, IMU, and wheel encoders.
- Upgraded robot systems by porting navigation stack to ROS2, integrating Slam toolbox and NAV2, and developing automation solutions for our robots leveraging Docker and shell scripts for operational efficiency.

GreyNodes, *Data Scientist Freelancer* | India   Jan 2021- Feb 2022

- Conducted A/B testing to optimize digital advertising strategies, analyzing user engagement metrics. Implemented data-driven improvements that significantly enhanced user engagement and campaign performance.
- Utilized ARIMA models to accurately forecast demand spikes, optimizing inventory for peak periods like back-to-school and holidays, effectively minimizing overstock and stockouts.

PROJECTS

Time-Constrained Scheduling and Collision-Free Control for A Fleet of Mobile Robots   Oct 2023 - Jan 2024

- Developed an automated pipeline that integrates scheduler outputs with Model Predictive Control (MPC) for optimized task scheduling and trajectory planning.
- Created a dynamic online scheduler prototype that enables real-time task scheduling and trajectory adjustments within MPC, significantly improving planning responsiveness and resource management.

Image-to-Image Translations Using GANs   Mar 2023 - May 2023

- Implemented Generative Adversarial Networks (GANs), including Conditional GANs (Pix2Pix) and CycleGANs, for cross-domain image translation.

Intelligent Navigation for Kiwi Cars   Mar 2023 - May 2023

- Developed a YOLOv5 Nano model for cone detection, integrating an adaptive steering algorithm to enhance autonomous vehicle control in the Kiwi car.
- Implemented a color-based object detection system using OpenCV for specific targets, and established a dynamic wandering system that adjusts navigation priorities based on battery levels for effective autonomous operations.

Cooperative Path Finding with Time-Delay Communication   Nov 2022 - Dec 2022

- Developed an agent-based simulation using bacteria-inspired algorithms to demonstrate autonomous cooperation and communication among agents, applicable to drone-based search-and-rescue operations, enhancing real-world pathfinding and timing in communication-critical scenarios.