SUHAS NAGARAJ

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EDUCATION

Master of Engineering in Robotics [CGPA: 4.0 / 4.0]　　　　　　　　　　**Expected Graduation: May 2025**
University Of Maryland, College Park　　　　　　　　　　　　　　　　　　　College Park, United States

Bachelor of Engineering in Mechanical Engineering [CGPA: 9.30 / 10]　　**August 2017 - July 2021**
Ramaiah Institute of Technology　　　　　　　　　　　　　　　　　　　　　Bengaluru, India

PROFESSIONAL EXPERIENCE

Research Intern　　　　　　　　　　　　　　　　　　　　　　　　　　**May 2024 – August 2024**
Intelligent Inclusive Interaction Design (I3D) Lab, Indian Institute of Science (IISc)　　Bengaluru, India

- Conducted research under the guidance of Prof. Pradipta Biswas from the Department of Design and Manufacturing and the Robert Bosch Centre for Cyber Physical Systems; Focused on developing a novel SLAM approach integrating LIDAR sensors with Gaussian Splatting and ROS for enhanced autonomous navigation and mapping.
- Currently working on publishing research findings related to the novel SLAM approach at the International Conference on Robotics and Automation (ICRA).

Engineering Intern　　　　　　　　　　　　　　　　　　　　　　　**October 2022 – March 2023**
DiFACTO Robotics and Automation　　　　　　　　　　　　　　　　　　　Bengaluru, India

- Excelled in designing automation parts using SolidWorks and conducting industrial process simulations with FANUC RoboGuide.
- Gained proficiency in offline and online programming of industrial robots (ABB and FANUC).
- Developed skills in PLC programming and Devicenet interfacing to effectively control ABB and FANUC robot cells using Mitsubishi PLC.

Technical Consultant　　　　　　　　　　　　　　　　　　　　　　**August 2021 – March 2022**
U-Solar Clean Energy Solutions Pvt. Ltd.　　　　　　　　　　　　　　　　Bengaluru, India

- Managed clients and accelerated sales as part of the inaugural team of Technical Consultants; spearheaded market and policy research initiatives to boost brand visibility while devising strategies for business expansion.
- Contributed as a vital team member to a 25% increase in leads and projects in the pipeline.

SKILLS

- **Technical Expertise:** ROS1/ROS2, Industrial Robot Programming (ABB, FANUC), Control Systems, Path Planning, SLAM, Computer Vision, 3D Reconstruction, Machine Learning, Deep Learning, Natural Language Processing.
- **Programming Languages:** Python, C++, MATLAB, RAPID (ABB), KAREL (FANUC), PLC Programming.
- **Libraries/Frameworks:** TensorFlow, PyTorch, OpenCV, Open3D, NumPy, pandas, scikit-learn.
- **Industrial Robotics:** FANUC ROBOGUIDE, ABB Robot Studio, CimStation Robotics.
- **Design & Simulation Tools:** SolidWorks, AutoCAD, Fusion 360, CATIA, Simulink.
- **Hardware:** RMRC Anaconda, Turtlebot3, Tortoisebot, Tankbot, Fanuc R-2000iC/210L, ABB IRB 1600.
- **Others:** Docker, Linux, GitHub, MS Office.

PROJECTS [www.suhasnagaraj.com/projects]

- Obstacle avoidance and autonomous navigation of TurtleBot using Deep Q-Network (Deep Reinforcement Learning).
- Stop Sign detection, trial/waypoint following, dynamic obstacle avoidance on a real TurtleBot3 waffle.
- Maze navigation by reading aruco markers, object recognition using camera and spatial localization by tf transforms on Gazebo using TurtleBot (C++ and ROS2).
- Mapping of an unknown environment (SLAM) and autonomous navigation of TurtleBot on Gazebo (C++ and ROS2).
- Inverse Kinematics and Machine Tending Simulation of ABB IRB 1600 on Gazebo using ROS2.
- Implemented Dijkstra's, A*, Real Time RRT*, Bidirectional A* and Potential Field Algorithm for Robot Path Planning.
- Simulation of Feedback Linearization and Sliding mode control of Quadcopter using MATLAB Simulink
- Using RNN and LSTM models to forecast the future trends of Airline Passengers on PyTorch and comparing the accuracy.
- Camera Calibration; Depth and disparity estimation using stereo vision.
- Using Homography and Perspective transform for image stitching.
- LQR and LQG control of a dual pendulum suspended cart.