Adithya Mylavarapu Naga

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ABOUT ME

Enthusiatic and Organized post graduate from the Universiteit Twente, Netherlands, with a keen interest in Autonomous Systems and Control. I utilize my interpersonal skills to promote effective teamwork, breaking down problems into accessible steps.

Hobby: Ultimate Frisbee, Bouldering

EDUCATION

Sept 2021 - July 2024 — Universiteit Twente, Enschede, Netherlands.
⟶ M.Sc. Systems and Control (Robotics and Mechatronics)

June 2017 - May 2021 — S. R. M. Institute of Science and Technology, Chennai, India.
⟶ B.Tech Mechatronics Engineering

Technical Skills :

⟶ Subjects : Robotics ◇ Optimal Control ◇ Systems Dynamics ◇ Computer Vision
⟶ Programming : C++ ◇ ◇ MATLAB/Simulink ◇ Robot Operating System (ROS/2) ◇ LaTex

Languages : English (C1) ◇ **German (B1)**

WORK EXPERIENCE

Feb 2023 - April 2023
Nov 2021 - Feb 2022
6 months

Student Assistant - Universiteit Twente, The Netherlands
⟶Teaching assistant for Advanced Software Development for Robotics Course
⟶ Worked on Real-Time component based software development and RTOS
RTOS, ROS2(C++)

Sept 2022 - Dec 2022
3 months

Robotics Intern - Aziobot B. V. , Eindhoven, The Netherlands
◇ Self-exploration and Mapping for Autonomous Mobile Robots
⟶ Designed and developed a robot model for an Autonomous Floor Scrubber in ROS.
⟶ Built and compared SLAM algorithms and frontier based exploration algorithm
RViz, ROS(C++)

Sept 2020 - Oct 2020

Engineer Intern - Hinduja Tech Limited, Chennai, India.
⟶ Worked with a collaborative team on the project1 "Automatic Pizza Vending Machine".
⟶ Proposed a new methodology for the pizza cutting and cleaning mechanism.

PROJECTS

MASTER THESIS

July 2023 - July 2024

Safety Metrics for Human-Aerial Robot Collaboration, in presence of Aerodynamic Disturbances
⟶ Developed a safety metric for a 6 propeller UAV that enables safe human-aerial collaboration.
⟶ Developed an aerodynamic model that accounts for wind disturbance.
⟶ Developed a Robust NMPC to optimize the robot's trajectory in the presence of aerodynamic disturbances.
MATLAB/Simulink,C++

BACHELOR THESIS

Jan 2021 - May 2021

Development of a Collaborative Multi-Robot System for Material Handling
⟶ Multiple Mobile robots transport a material from one location to another autonomously within the arena by collaborating with each other.
⟶ Developed a novel "Composite Robot Algorithm" for a holonomic robot formation to transport the object. Configured a co-operative path planning algorithm which entails three collision free paths from a single set of waypoints.
Python

Jan 2020 - June 2020	RoboCUBES - An Intelligent, Modular, Reconfigurable Robotics Platform $\longrightarrow$ Built a modular reconfigurable robot that uses modular cubes to autonomously detect many configurations and performs a specific functions based on the detected configuration. $\longrightarrow$ Developed a **patented** novel hardware addressing system.
Dec 2019 - Feb 2020	Behavioral Cloning in Autonomous Vehicles using Deep Learning $\longrightarrow$ Implemented a self-driving car using behavioral cloning in the Unity Self-Driving Car Simulator, achieving autonomous navigation on new tracks. $\longrightarrow$ Designed a modified LeNet CNN for traffic sign classification and developed a custom NVIDIA-based CNN architecture with data augmentation for training and testing simulation data.

CONTRIBUTIONS

PATENT

November 2020	An On-board Hardware Addressing System for Modular Reconfigurable Robots $\longrightarrow$ Developed a hardware addressing system enabling modular robots to autonomously detect their configurations. $\longrightarrow$ Utilizes modified power rails to assign unique hardware addresses to detect robot configurations autonomously. Published - 202041046707

PUBLICATION

April 2022	Composite Robot Algorithm and Multi-Robot Formation Strategy for Collaborative Material Handling Systems $\longrightarrow$ A symmetric formation rule for multiple mobile robots to collaborate and navigate an environment. $\longrightarrow$ Multiple mobile robots in formation is considered a composite robot and collaborate with each other and plan a path to maintain formation until the goal is reached.

AWARDS AND PRIZES

January 2020	Runners Up : Make-A-Thon 4.0 by Lema Labs - Project : BlockBots Most Popular Project Award - Make-A-Thon 4.0
June 2019	2^{nd} Position: Maze Solving Robot Competition - Kaizen Robotics
December 2018	2^{nd} Position: Course Following Robot Competition - Kaizen Robotics
April 2018	Best Project: Physics and Nanotechnology Research Day - Obstacle Avoiding Robot

CERTIFICATIONS

Following are the certifications that I pursued online to supplement my knowledge.

ROBOTICS CERTIFICATIONS

June 2020	Control of Mobile Robots - Georgia Institute of Technology (Coursera)
January 2020	Autonomous Mobile Robots - ETH Zurich (Edx)
June 2019	Kaizen Robotics Training Program - Lema Labs

ML CERTIFICATIONS

May 2020 - July 2020	Self - Driving Cars Specialization - University of Toronto (Coursera) ◇ Introduction to Self Driving Cars ◇ State Estimation and Localisation of Self Driving Cars ◇ Visual Perception of Self Driving Cars ◇ Motion Planning for Self Driving Cars
July 2020	Structuring Machine Learning Projects (Coursera)
June 2020	Machine Learning Advanced Certification Program (Simpli Learn)