

WINSTON DOSS

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EDUCATION

Indian Institute of Technology Madras <i>Exchange Student (Final Year)</i>	May 2024
<ul style="list-style-type: none">Worked under Dr. Bijo Sebastian and Dr. Lakshmi Narasimhan on <i>Perception for Autonomous vehicles</i>CGPA: 8.8/10.0	
National Institute of Technology (NIT), Puducherry	May 2023
<i>Bachelor of Technology in Electronics and Communication Engineering</i>	
<ul style="list-style-type: none">CGPA: 8.68/10.0 (<i>First class with Distinction</i>)	

PUBLICATION

Marveldoss, W., Joshika, B., & Sebastian, B. " Tracking and estimation approach for human-aware mobile robot navigation " <i>*IEEE Sensor Letters*</i> . Early Access. DOI:10.1109/LSENS.2024.3492373, 2024	June 2023-Aug 2024
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RELEVANT EXPERIENCE

Warehouse Drone	Sept 2024-Present
<i>Competition Project Team Lead</i>	
<ul style="list-style-type: none">Leading a team of four to develop a <i>quadcopter for autonomous warehouse operations</i>, addressing the growing need for efficient supply chain solutions.Designed and simulated a <i>PID controller in Gazebo-ROS2</i> for precise flight stabilization and implemented an <i>ArUco marker-based vision system</i> to navigate the complex airspace, avoiding obstacles and locating critical packages.	
Teaching Assistant	July 2024-Present
<i>Introduction to Field and Service Robotics (ED5315), Engineering Design, IIT Madras</i>	
<ul style="list-style-type: none">Designed <i>Python-based assignments with CoppeliaSim integration</i> to enhance student comprehension of the <i>Extended Kalman Filter</i>, and automated evaluations via VPL with <i>custom grading scripts</i>.Led classroom <i>tutorials</i> and provided exam support, assisting with <i>invigilation and grading</i> to facilitate both learning and administration	
Self-Balancing Bike Robot	Aug 2023-Jan 2024
<i>Competition Project</i>	
<ul style="list-style-type: none">Developed a <i>non-conventional self-balancing robot</i> with a <i>front omniwheel</i> for lateral movement and a rear wheel for propulsion, achieving unique mobilityDesigned and implemented an <i>LQR-based control system in Octave</i> for <i>real-time stabilization</i>, later fine-tuned through simulation in <i>CoppeliaSim</i>.Assembled the physical robot and successfully transferred the control algorithm to hardware, ensuring stability in real-world operations	
Omni-Wheel Robot with Camera-Based Localization	Sep 2023-Feb 2024
<i>Competition Project</i>	
<ul style="list-style-type: none">Developed a go-to-goal controller for an omni-wheel robot to follow waypoints for drawing, with real-time control via Wi-Fi communication between a laptop and ESP32Integrated Aruco marker-based localization using a calibrated overhead camera, simulated the system in Gazebo, and successfully assembled and deployed the physical setup	
Multi-Robot Path Planning for Warehouse Logistics	Feb 2024 – Apr 2024
<i>Course Project</i>	
<ul style="list-style-type: none"><i>Designed and implemented a centralized multi-robot system</i> for warehouse logistics, optimizing task completion time with static obstacles using three algorithms: Serial A*, CBS A*, and Serial RRT.<i>Simulated the system in CoppeliaSim</i> and evaluated the algorithms based on planning time, path steps, and execution time, highlighting the strengths and trade-offs of each.	
Atum Robotics, Anna University Incubation Cell	Jun 2022 – Aug 2022
Robotics-Embedded Engineer, Intern	
<ul style="list-style-type: none">Developed a cloud-integrated web application using Node-RED to control a droid remotelyProgrammed an ESP32 microcontroller to interface with the Node-RED platform hosted on AWS, enabling real-time command transmission over the Internet.	

RELEVANT COURSEWORK

Introduction to Field and Service Robotics | Introduction to Motion Planning | Marine Autonomous Vehicles | Image signal Processing | Control systems | Robotics Laboratory | Soft Computing | Embedded systems Design

TECHNICAL SKILLS

Languages: Python, C/C++, Matlab, Octave, Verilog	Tools/Platforms: ROS, ROS2, CoppeliaSim, Gazebo, Arduino, UR5 Robotic Arm, Pioneer 3-AT
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