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Nicosia, Cyprus.

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PROFILE

As a Research Assistant specializing in robotics, I have gained hands-on experience developing advanced solutions for autonomous systems. With a strong foundation in mechanical engineering and expertise in machine learning, I have contributed to cutting-edge projects, including quadruped robotics and agricultural automation. My academic background, coupled with real-world research, enables me to drive innovation and make meaningful contributions to the evolving field of robotics. I am looking forward to further advancing my career through collaborative research and impactful projects.

EDUCATION & QUALIFICATIONS

University of Bristol, Bristol, UK - Master`s degree Robotics

2023

Modules taught are Robotics Systems, Robotic research and technology methods, Introduction to Artificial Intelligence, Bio-Inspired Artificial Intelligence, Robotics Fundamentals, Machine Vision, and Assistive Robotics.

[Dissertation: Threshold response models applied to best-of-n in Swarm Robotics.](#)

This is a comprehensive exploration of threshold response models applied to the best - of - n problem in swarm robotics with options of more than three. Our model provides a balanced, effective mechanism that doesn't compromise on essential attributes like the number of options, average quality and robustness. This unique integration aligns well with the observations made in natural swarms. Moreover, our research validates the theoretical frameworks discussed, including collective consensus decision-making and decentralized control. The "best-of-n" models with threshold responses not only align with these theories but extend them by offering a more nuanced, adaptable mechanism for decision-making in swarm robotics. You can find the repositories of all my projects in the Github profile above or [here](#).

Projects include:

1. [Line Following Challenge](#) - The robot will be dropped into the ocean; it must autonomously survey the length of a pipeline to find an expected breakage and then return to its drop-off point to be recovered. The Line Following Challenge has been successfully completed using the Pololu 3Pi+ mobile robot. Using its sensors, the robot was programmed to navigate a black tape line on the provided map autonomously.
2. [Investigating odometry errors caused during collisions due to bump sensors](#) - Led a team and Improved robot's accelerometer and encoder-based kinematics using sensor fusion for IR based collision avoidance. Collisions are generally undesired in mobile robots. Most of the systems use a submodule of collision avoidance. In this report, we investigate the errors caused due to collision and how it varies according to different robot parameters, i.e. speed and angles. In the 3pi+ robot, we made an assumption based on existing literature on how it creates an Odometry inaccuracy. Our results use the mean and variance of the recorded error to explain the error magnitude in different scenarios.
3. [Apple counting using machine learning](#) - Employed machine learning techniques to accurately count apples in an orchard, streamlining agricultural processes. The first method used YoloV5s, a state-of-the-art object detection algorithm, and the second method was a conventional approach using a blob detection algorithm on top of a mask created using HSV colour space. The project aimed to compare the accuracy and efficiency of these two approaches. The results showed that YoloV5s performed better in accuracy and speed than the conventional image processing method.
4. [A Case Study of Socially and Physically Assistive Robots in Human-Robot Interaction](#) - Conducted an in-depth analysis of socially and physically assistive robots, examining their impact on human-robot interaction and potential applications in various settings. The two experiments discussed in the demonstrated the potential of socially and physically assistive robots in improving the quality of life for individuals with disabilities. In the first experiment, the socially assistive robot, Pepper, was able to assist a partially sighted social worker, Claudia, with various daily tasks. The results indicated that Pepper's interaction with Claudia was positive and effective

in assisting her with these tasks. The second experiment aimed to determine whether a TurtleBot3 robot could assist Claudia with her daily medication routine. The robot was programmed to deliver medication at specific times throughout the day directly to Claudia's location, which was made possible by asking the robot to find the 'beacon location' and navigate to that location on the map. The results showed that the robot could successfully deliver medication to Claudia at the stipulated time.

SRM University, Chennai, India - Bachelor's degree Mechanical Engineering, 78%

2020

Principal study topics include fluid mechanics, thermodynamics & heat transfer, solid mechanics, materials engineering, manufacturing, energy systems, dynamics & control Computer-Aided Design (CAD), Computer Integrated Manufacturing (CIM) and others. Completed multiple projects during the time of study on topics such as:

1. Automated Pill Dispenser

2. Design Modifications of Temporomandibular Joint Implant: A Finite Element Study: Examined the TMJ implant on its ability to maintain its structure on the mandible and increased its ability to handle more stress and strain. This resulted in three different designs of temporomandibular joint implants of two different materials with five different positionings of screws which were tested with loading conditions of a practical scenario and the optimal design has been found among them.

WORK EXPERIENCE

Research Assistant | CYENS Centre of Excellence

Sep 2024 – Current

- Researcher on the innovative Robot Parkour project, focusing on enhancing quadruped Unitree A1's agility and adaptability in complex and dynamic environments using [reinforcement learning](#).
- Working with a 2-finger universal gripper to enhance robotic manipulation efficiency and precision.
- Collaborate with interdisciplinary teams to integrate cutting-edge AI and machine learning techniques into robotic systems.
- Author technical reports and contribute to academic publications in the field of robotics and automation.
- Present research findings at internal meetings, fostering knowledge exchange and collaboration opportunities.

Robotics Intern | Safer Industries Ltd

Apr 2023 - Jun 2023

Safer Industries provides security to the community using autonomous technology.

- Spearheaded the creation of meticulous design specifications for security agents, incorporating control systems, vision sensors, IR sensors, and thermal sensors to enhance surveillance capabilities.
- Executed comprehensive analysis on the operational requisites and associated costs of the security agents. The in-depth evaluation facilitated the formulation of optimized solutions, which substantially enhanced performance metrics and achieved cost-efficiency.

Robotics Intern | VERZEO

Sep 2019 - Nov 2019

As an integral part of Verzeo, a forefront platform fostering learning through interactive and collaborative methods, I had the opportunity to amplify my proficiency in autonomous systems.

- Undertook a rigorous training program that adhered to stringent industry standards, working under the guidance of industry stalwarts on autonomous projects. This hands-on experience honed my ability to apply theoretical knowledge to practical applications.
- Leveraged IFTTT servers to successfully automate a home, demonstrating my capacity for innovation and problem-solving in the realm of home automation.

Volunteer | ISHRAE SRM, Chennai Chapter**Nov 2016 - Apr 2018**

- Played a pivotal role in member recruitment and event management during my inaugural year, streamlining procedures and effectively contributing to the growth of the chapter.
- Took on a leadership role in managing a multitude of events, effectively coordinating recruits' responsibilities and schedules to ensure seamless execution.

KEY SKILLS

Programming Languages	Python, C++, HTML
Tools and Libraries	Robot Operating System (ROS), Scikit Learn, PyTorch, TensorFlow, OpenCV, NumPy
CAD	AutoCAD, SolidWorks, Fusion360, Blender, Catia, ANSYS
Simulation	Isaac SIM, Isaac Lab, Gazebo, CoppelaSIM
Microcontrollers & Microprocessors	Nvidia Jetson NX, Nvidia Jetson AGX Orin, Arduino, ESP32, ESP8266, ATmega, ATTiny
Transferrable Skills	Adaptability, Teamwork, Problem Solving, Time Management
Language	English – C1

AWARDS AND CERTIFICATES

- Robotics: Aerial Robotics, Coursera, August 2024.
- Bristol Plus Award - University of Bristol, April 2023.
- ROS – Udemy, September 2021.
- Python – Udemy, September 2021.
- NPTEL Robotics – November 2019.
- IOT – Lema Labs, March 2019.
- Performed exceptionally good in the joint zonal training of basic robotics conducted by KJP and IIT BHU in April 2017.

INTERESTS

Photography, Books, Badminton, Pencil Drawings, 3D Animation.