Vishal Subramanian

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github.com/Vishalsub

EDUCATION

National Unversity of Singapore- Singapore, Msc in Robotics — Aug 2024 – Present

Sri Krishna Engineering and technology-India, BE in Mechatronics — Aug 2019 – May 2023

CORE COMPETENCIES

Programming Languages: Python, C++
Robotics and Automation: ROS1 & ROS2, AMR Navigation Stack
Clouds & Databases: GCP, Cloud Function, Firebase
Computer Vision: Opencv, YOLOv8, Image Segmentation, Post Estimation
Developer Tools: Linux, Vim, GitHub, Postman, Docker
Animation: Blender, Maya, After Effects, Premiere Pro
Languages: Proficient in English and Tamil

WORK EXPERIENCE

Robotics Engineer Intern, Doozy Robotics – Chennai, Tamil Nadu, India — Jul 2023 – Oct 2023

- Optimized Deeplearning Model for child pose estimation,**achieving 92% tracking accuracy over 20 meters on airport conveyor belts**.
- Deployed real-time monitoring systems, reducing child safety risks in **high-traffic zones by 30%.**
- Collaborated with teams to integrate solutions into airport security frameworks with high operational efficiency.
- Tools: Python, YOLOv8, TensorFlow, OpenCV, jetson xavier nx, RealSense D400 Series.

ACADEMIC PROJECT

Path Planning for Origami-Based Shape-Changing Robot — *Aug 2024 – Nov 2024*
[National Unversity of Singapore- Singapore]

- Developed a robot capable of dynamically altering its shape to adapt to diverse environments, integrating **ROS2 Humble** for smooth trajectory planning and surface-specific navigation.
- Designed and implemented real-time motion control using ROS2 Control Plugin, optimizing adaptability and precision for confined spaces and varied surfaces.
- Incorporated **TD3 (Twin Delayed Deep Deterministic Policy Gradient)** deep reinforcement learning to enhance motion planning, enabling the robot to learn optimal navigation strategies in dynamic environments.
- **Tools used: ROS 2 Humble, Python, motion planning algorithms, origami-based design principles.**

Autonomous Library Management Robot — *Aug 2023 – May 2024*
[Sri Krishna Engineering and technology-India]

- Built a robot with 95% navigation accuracy using ROS and SLAM algorithms to autonomously navigate and organize books in a library environment.
- Programmed the robot for book categorization using computer vision and barcode scanning, achieving a 98% success rate, and integrated expressive humanoid features for improved user interaction.
- **Tools used: ROS 1 noetic, SLAM, Python, OpenCV, Arduino, Raspberry pi 4, CAD tools (Fusion 360) for custom mechanical designs.**

Interactive Facial Expressive Robot *Feb 2022 – May 2022*
[Sri Krishna Engineering and technology-India]

- Designed a lifelike robotic head with 12 servo motors for realistic facial expressions, using 3D printing and Fusion 360 to create over 300 custom components.
- Programmed speech synthesis and recognition using Google Text-to-Speech API, enabling natural user interaction and achieving an 85% engagement rate in user tests.
- **Tools used: Arduino, Python, Servo motors, Google Text-to-Speech API, 3D Printing, Circuit design software (Eagle).**

PATENTS

VIRTUAL LABORATORY FOR SCIENCE EXPERIMENT Dec 9, 2022

Vishnu Prakash, ***Vishal Subramanian***, Neelash Kannan, Mrs. Vignesh T, Dheeraj

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COMPETITIONS

Volvo Cars Singapore Tech Hub Hackathon 2025 Jan 22, 2025

- **Awarded 3rd Prize** for developing an advanced computer vision-based solution for safe urban navigation using a TurtleBot Burger robot.
- Explored the innovative implementation of an Autonomous Mobile Robot system to streamline library operations, paving the way for futuristic advancements in information management.

VR Virtual Laboratory With Haptic glove SIH 2022 Aug 23, 2022

- built an VR virtual laboratory for school students where students can perform virtual lab experiments virtualy in VR.
- Won National level Hackathon SIH(Smart India Hackathon) special category award in grand finale 2022

Line Follower DIY ROBOT USING IOT 2019 Dec 03, 2019

- Designed and fabricated a Line follower bot and participated in the Technoxian Robotics Championship, presented bot to the Event Heads and certified for the Project

Interests

- **Robotics and Automation**
- **Deep Learning Applications in Robotics**
- **Flexible and Adaptive Robotic Systems**
- **Soft Robotics and Bio-Inspired Designs**
- **Human Brain-Robot Interaction and Control**