

NEELASH KANNAN

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PROFILE

Mechatronics engineer pursuing an MSc in Robotics at Heriot-Watt University, with hands-on experience deploying AI and autonomous systems on real robots. Proficient in Python, ROS1/ROS2, and full-stack development, with a proven track record of integrating AI models (LLMs, computer vision) into robotic platforms. Experienced in working across diverse robot types including mobile robots, manipulators, and humanoids. Startup founder with strong communication skills and a passion for making autonomous systems safer and smarter. Seeking a placement from July 2025 to contribute to cutting-edge robotics AI deployment.

EDUCATION

M.Sc. Robotics with Industrial Application

2024–Expected 2026

Heriot-Watt University, Edinburgh, UK

- Robot Simulations: Programming and coding autonomous navigation using Python in ROS1/ROS2; developed and tested navigation algorithms in simulation with Gazebo (e.g., TurtleBot) using the ROS Navigation Stack.
- Kinematics and Control Systems: Mathematical modeling and control of robotic systems for precise movement and positioning
- Motion Planning: Algorithm development for path planning and obstacle avoidance in autonomous systems
- Hands-on training using ROS on real and simulated platforms

B.E. Mechatronics Engineering

2019–2023

Sri Krishna College of Engineering and Technology, India

- Interdisciplinary foundation in mechanics, electronics, and computer science for robotics and automation
- Strong foundation in CAD Softwares like Fusion360, CATIA, AutoCAD and Siemens NX
- Led campus robotics club projects and national level Hackathons
- Final year projects published in international conferences

EXPERIENCE

Mechatronics Engineering Intern

July–Nov 2025

IntelliDigest, Edinburgh, UK

- Designed a dual-microcontroller control system (ESP32 + RP2040) with built-in motor drivers for the iDigest bio-upcycling food waste recycling robot
- Developed embedded firmware with ESP32 handling Wi-Fi connectivity and RP2040 managing real-time motor control via Programmable I/O (PIO)
- Integrated sensors for monitoring temperature, moisture, and motor feedback to enable closed-loop process control

CAD Design Intern

Jan–Sept 2023

Valeo India Pvt. Ltd., Chennai, India

- Worked in the motor team, designing motor components and assemblies using CATIA and Siemens NX
- Applied Geometric Dimensioning & Tolerancing (GD&T) principles to ensure manufacturing accuracy
- Collaborated to optimize motor designs for performance and manufacturability
- Gained exposure to automotive motor systems and design workflows

Founder

2020–Present

Robonium, India

- Built custom 3D printers and configured OctoPrint on Raspberry Pi for remote monitoring, automated print queuing, and failure detection
- Developed a web-based platform with automated STL file analysis, real-time pricing algorithms, and order

management system

- Applied CAD expertise to assist customers with design optimization for additive manufacturing and functional prototyping

PROJECTS

Autonomous Robot Butler, *Sri Krishna College of Engineering and Technology, Sept-Dec 2022*

Designed and developed an indoor service robot leveraging 2D LiDAR and Hector SLAM on ROS1 Noetic for robust environment mapping; integrated a Python Streamlit web app with Firebase for table selection and menu management.

Prosthetic Hand, *Smart India Hackathon - 2020, Aug-Oct 2020*

Designed an articulated, human-like prosthetic hand 3D-printed in PLA, with each finger actuated by servo-driven tendon mechanisms. Integrated SparkFun MyoWare EMG sensors to capture muscle signals and processed them via Arduino for real-time, intuitive control.

AMIGO - AI Companion Robot, *Personal Project, Mar-Aug 2024*

Deployed LLaMA3 LLM on-device for real-time conversational AI with Whisper STT and FishSpeech TTS integration. Built a Retrieval-Augmented Generation (RAG) pipeline using vector embeddings for context-aware responses. Containerized the stack using Docker for reproducible deployment across hardware platforms.

Teleoperated Semi-Humanoid Robot, *Sri Krishna College of Engineering and Technology, Jan-Apr 2023*

Designed and built a semi-humanoid teleoperation robot on a circular mobile base with two articulated arms offering 18 degrees of freedom (9 DOF per arm). Implemented an OpenCV-based application using MediaPipe to capture human body and joint movements.

Energy-Efficient Wireless Sensor Network, *Heriot-Watt University, Mar-Apr 2024*

Designed a modular, low-power IoT architecture with battery-powered ESP32 sensor nodes and DHT11 sensors transmitting via ESP-NOW. Employed a USB-powered ESP32 gateway to aggregate node data and forward it over I2C to a second ESP32 for MQTT publication.

PUBLICATIONS

- **Design and Fabrication of Autonomous Robot Butler**, AIP Conference Proceedings, Jan 2023; [\[Link\]](#)
- **Design and Fabrication of Smart Electric Bike**, AIP Conference Proceedings, Jan 2023; [\[Link\]](#)

AWARDS & ACHIEVEMENTS

- **Special Category Winner**, Smart India Hackathon, 2022 — Developed a VR/AR-based virtual laboratory system over a five-day hackathon to address remote lab access
- **Finalist**, Unibots UK Competition, 2025 — Achieved 6th place nationwide in autonomous ball-collecting robot competition

TECHNICAL SKILLS

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| • Programming
Python, C/C++, MATLAB, Embedded C | • Hardware
Raspberry Pi, ESP32, NVIDIA Jetson, LiDAR, IMU, Realsense |
| • Robotics & AI
ROS1/ROS2, Gazebo, OpenCV, LLMs, RAG | • Full-Stack
Flask, Streamlit, Firebase, REST APIs |
| • DevOps & MLOps
Docker, Git, Linux, CI/CD | • CAD
Fusion360, NX, CATIA, AutoCAD |

CERTIFICATIONS

- **ROS Basics**, The Construct, 2024
- **ROS Navigation**, The Construct, 2024
- **Sensor Data Fusion**, The Construct, 2024