



Eshwar Potnuru

eshwarpotnuru35@gmail.com
Woodlands, Singapore 730762
+65 80585329

Portfolio: <https://eshwarpotnuru35.wixstudio.com/esshaa> | **WWW:** Bold Profile

PERSONAL DETAILS

Date of Birth: 02/05/2004

Marital Status: Single

Gender: Male

Passport: V345644

WEBSITES, PORTFOLIOS, PROFILES

- linkedin.com/in/eshwar-potnuru-ba4918266
- github.com/Eshwar-Potnuru
- dev-eshweb.pantheonsite.io/
- Highly skilled Robotics and AI Engineer with a First-Class Honours degree from the University of Hertfordshire, specializing in machine learning, SLAM, and control systems.
- Proven ability to design and implement innovative solutions using Python, C++, ROS, TensorFlow, and PostgreSQL, with hands-on experience in NLP and intelligent automation.
- Strong background in software development for real-world applications, including:
- Building AI-driven automation tools (Gmail API, Discord integration, Smart AI) at AIM Inc. to optimize internal workflows.
- Engineering a Fee Estimator Web Application for DL Law Cooperation, ensuring accuracy and usability.

WORK HISTORY

MACHINE LEARNING ENGINEER

AIM Co., Pvt
Ltd. | Tokyo,
Japan
(Remote)

- Developed modular AI automation tools as part of an internal AI Operating System to streamline team operations.
- Tool 1: Built a Discord Task Bot using NLP to capture and log tasks from team conversations into Google Sheets.
- Tool 2: Engineered a Gmail Task Parser to extract structured task details, sender info, deadlines, and attachments from emails; auto logged to a PostgreSQL database.
- OCR Flyer Parser: Created an automated pipeline that extracts product details (text, price, codes) from Japanese retail flyers and generates annotated PDFs with bounding boxes.
- Voice-Controlled AI Assistant: Designed an engaging virtual assistant with voice command input, animations, and mini-games; showcased at the company Expo.
- Integrated date parsing, AI-generated email replies, and document processing, improving internal workflow efficiency.
- Proposed and implemented key backend enhancements including RabbitMQ for decoupling, Docker containerization, and transitioning from Google Sheets to a microservice-ready database architecture.
- Collaborated closely with engineers and product managers to deliver prototypes, conduct testing, and deploy updates with full documentation and client review cycles.

SOFTWARE ENGINEER (CONTRACT)

DL Law
Cooperation |
Singapore

- Developed an interactive Legal Fee Estimator with a chatbot-style UI using HTML, JavaScript, and CSS, seamlessly integrated into WordPress.
- Designed a decision tree-based questionnaire for dynamic fee calculations, ensuring a user-friendly and visually appealing experience.

- Developing a freelance Emotional Identity & Voice Recognition System, demonstrating end-to-end project execution.
- Analytical problem-solver with a proactive approach, adept at translating complex technical concepts into practical, scalable solutions.
- Committed to continuous learning and leveraging emerging technologies to address challenges in dynamic environments.

EDUCATION

JAN 2024

Bachelor of Engineering with Honours

Robotics and Artificial Intelligence
| University of Hertfordshire
(UH) | London, United Kingdom

- Final Year Project: AI Autonomous Solution for Effective Home Maintenance Bot.
- GPA: First-Class Honors

JAN 2022

Diploma

Electrical Engineering | Centurion
University of Technology and
Management (CUTM) | Odisha,
India

- Core Competencies: Electrical circuit design, microcontroller programming, embedded systems, and power electronics.
- GPA: Distinction

JAN 2019

10th Standard

Akshara The School | Andhra
Pradesh, India

- Conducted research, documentation, and iterative improvements based on client feedback, delivering a successful prototype with positive client reviews.
- Integrated smart form logic and email alerts, streamlining internal workflows and client communications.
- Collaborated directly with the legal team to refine features, document feedback, and ensure compliance with operational requirements.
- Delivered a fully functional, scalable web platform praised for improving efficiency and reducing manual workload.

FINAL YEAR PROJECT - SMART HOME AI BOT: AUTONOMOUS SOLUTION FOR EFFECTIVE HOME MAINTENANCE

University of
Hertfordshire |
London, UK

- Designed and implemented an autonomous cleaning robot with SLAM-based navigation, integrating custom ROS Python nodes for efficient path planning and obstacle avoidance.
- Developed a detachable cart with a vacuum system, utilizing Fusion 360 for precision 3D modeling and rapid prototyping.
- Integrated LiDAR with Raspberry Pi 4 for real-time mapping, data processing, and decision-making, ensuring seamless operation in dynamic environments.
- Implemented advanced safety features, including parking mode and an alarm system, enhancing usability and operational reliability.

FREELANCER

Emotional
Identity and
Voice
Recognition
System|
Singapore

- Designed and implemented a speaker identification system utilizing three algorithms: K-Nearest Neighbors (KNN), Gaussian Mixture Model (GMM), and Hidden Markov Model (HMM).
- Extracted and processed MFCCs, ZCR, and other features to distinguish unique voice characteristics.
- Designed a MATLAB-based system integrating Raspberry Pi camera and microphone for real-time audio and facial identity and emotions recognition using different datasets.
- Gained expertise in real-time data acquisition, signal processing, and emotion/voice detection for human-interactive systems.

CERTIFICATIONS

- Software Engineering - (Electronic Arts - EA)
- Solution Architecture - (AWS)
- Email Marketing Software Certificate - (HubSpot Academy)
- Wordpress Certificate - (Unacademy)
- Data Analytics - Deloitte
- Certified Software Engineer - DL Law Cooperation
- First Class Honours - UH
- Program Member - (IES)

REFERENCES

Anil M. Lalwani (Director)
DL Law Corporation, Singapore +65 65570215 / 88910298,
anil@dllegal.com

Priveen Raj Naidu (Director)
Global Aviation Solutions, NCS, Singapore +65 92327571,
priveen.naidu@ncs.com.sg

Anna Thurai (General Manager)
Incall & Star Shield (Group), Singapore +65 96430488,
anna.thurai@incallsystem.com

Vicknes Kumar (Senior Manager)
Alexandra Hospital (NUHS), Singapore +65 9383 7049,
Vicknes_ramasamy@nuhs.edu.sg

MACHINE LEARNING FOR SPACE EXPLORATION

University of Hertfordshire | London, UK

- Applied machine learning algorithms to a dataset of 50,000 entries, determining the probability of celestial objects being planets.
- Developed a Python-based framework for data analysis, contributing to research in AI-driven astronomy.

CAMPUS TOURIST ASSISTANCE ROBOT

PSB Academy Singapore

- Led a team to create an AI-driven robot for campus navigation, face recognition, and visitor interaction.
- Showcased at a university exhibition, earning commendations for innovation.

UNIVERSITY ROBOTICS EXHIBITIONS

PSB Academy Singapore

- Exhibited several robotic designs and prototypes, showcasing advancements in autonomous navigation and AI-driven decision-making.

PROFESSIONAL SKILLS

Programming Languages & Frameworks

Python, C, C++, C#, JavaScript, Ruby, MATLAB

Machine Learning & AI

NLP (spaCy, Hugging Face Transformers), LLM Integration (OpenAI GPT-3.5/4), Task Automation, Prompt Engineering, ORC (Tesseract), AI-Powered Assistants, Data Parsing, Text Classification, Named Entity Recognition (NER), AI Email Automation, Real-Time Voice Command Inteperation.

Web Development

HTML, CSS, JSON, HTTP, Chatbot UI Design, API Integration (REST)

Database & Cloud

PostgreSQL, MySQL, Cloud Integration (Google Cloud, AWS basics), API Integration (Google Drive & Gmail API, Discord API), RabbitMQ (Producer & Consumer Systems)

LANGUAGES

English

Hindi

Telugu

Tamil

HOBBIES

Photography

Music

Robotics Prototyping

3D Printing & CAD Designing

Volunteering & Community Service

Bowling

Robotics & Control Systems

ROS, SLAM Navigation, Path Planning, Teleoperation, LiDAR Mapping, Sensor Integration, Computer Vision, Real-Time Decision Making, Robotics Design, Debugging

Hardware & Embedded Systems

Arduino IDE, Raspberry Pi, STM32, Romeo V2, 3D Printing (Bambu Printers), Sensor Modules & GPIO Programming

Design & Prototyping

Fusion 360, AutoCAD, AI UX Prototyping, Demo Engineering for Expo Projects

Software & Tools

VMware, pgAdmin4, VS Code, Google Colab, CoppeliaSim, Webots, pgAdmin4, Docker (Basics), Playwright (Automation Testing)

Soft Skills

Problem-Solving, Adaptability, Fast Learner, Team Collaboration, Communication, Leadership Project Planning & Execution, Team Collaboration - Project Management, Client Feedback Integration

PROJECTS RELATED TO ROBOTICS AND AI

Zigbee-Based Home Automation System

- Developed a wireless home automation system using Zigbee technology to control and communicate with Microcontrollers, lights, fans, and security features remotely.
- Implemented an interface for real-time control and monitoring.

Tele-Operated Surveillance Robot for Co-Working Spaces

- Developed a remote-controlled mobile robot using ZeroMQ for real-time communication and video streaming.
- Enabled security monitoring with obstacle detection and integrated drone support for expanded coverage.

Line-Tracing Robotic Car with Obstacle Avoidance

- Designed a self-navigating robotic car with PID-controlled line tracing and ultrasonic-based obstacle detection.
- Engineered mechanical chassis and embedded firmware for real-world deployment.
- Showcased in the University Science Exhibition - PSB Academy

Industrial Robotic Sorting Station (CoppeliaSim)

- Simulated an industrial sorting system in CoppeliaSim, programming robotic arms for object handling.
- Optimized task efficiency by integrating sensor feedback and actuator controls in a virtual environment.

Optimized CNN for Resource-Constrained Robotics (Webots)

- Trained lightweight CNN models (using ADAM/SGD optimizers) in Webots for real-time object classification.
- Balanced accuracy vs. computational load for edge-device deployment in robotics.

RoboNav: Single-Threaded Autonomous Vehicle

- Developed a low-latency robotic car with 4-DOF robotic arm (SG-90 servos), Bluetooth control, and sensor fusion.
- Programmed efficient pathfinding using ultrasonic/proximity sensors for obstacle avoidance.

ML Algorithm Benchmarking for Image Classification

- Compared Random Forest, SVM, and CNN on blurred image datasets (100 samples).
- Analyzed precision, recall, F1-score, and ROC curves to identify optimal models for low-visibility conditions.

Subsumption Architecture for E-puck Robot (Webots)

- Designed a behavior-based robotic controller for autonomous tasks (obstacle avoidance, line following) in Webots.
- Leveraged layered decision-making for adaptive responses.

Prototype Surveillance Robot Circuit

- Built a breadboard-based patrol robot with motion detection for square-area surveillance.
- Validated response time and reliability through iterative testing.

STM32-Based Traffic Light Simulation

- Programmed an STM32 Nucleo board to simulate traffic light logic with embedded C.
- Demonstrated real-time signal timing control using LED arrays.

AI-Driven Game Development (Tic Tac Toe)

- Number Guessing Game (Python): Designed a scored, interactive game with randomized logic.
- Tic-Tac-Toe AI (Minimax/Alpha-Beta Pruning): Built a GUI-based game with an unbeatable AI opponent.