

THARINDU MAHESH

IT Undergraduate

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ABOUT ME

I am a third-year undergraduate pursuing a BSc (Hons) in Information Technology at the University of Moratuwa, with experience in developing efficient and scalable applications. I am skilled in IT, AI, and ML technologies, with a strong foundation in programming and system design. I am a team player with strong problem-solving skills, able to perform well under pressure and deliver high-quality results. Motivated to apply my technical knowledge to make a real impact in the industry.

EDUCATION

BSc (Hons) in Information Technology University of Moratuwa	GPA-3.47	2023 - present
GCE A/L 2021 Kegalu Vidyalaya Kegalle	Combined mathematics: B Physics : B Chemistry : B Z Score : 1.657	2018-2022

PROJECTS

Autonomous Multi-Agent Market Intelligence System

Built an autonomous multi-agent AI system for competitive market intelligence using Python, LangChain, and LangGraph. Four specialized agents work in a DAG workflow: Strategist (research planning), Field Agent (Tavily API web research), Librarian (BeautifulSoup data extraction), and Consultant (report generation). Scraped data is indexed into session-based FAISS vector databases, enabling dynamic RAG for contextual analysis. Powered by Google Gemini 2.5 Flash, the system generates SWOT analyses, competitor matrices, and market gap reports with citations. Features an interactive Streamlit dashboard for real-time monitoring, follow-up Q&A against the knowledge base, and multi-format export capabilities.

AI Agent Bot for Cloud-Native Vehicle Service Platform

Contributed to a cloud-native vehicle service platform with 10+ microservices (Python, Go, Java Spring Boot) orchestrated via Kubernetes and Next.js frontend.

My Contribution: Implemented an intelligent customer service agent using Python, FastAPI, LangChain, and Google Gemini 2.5 Flash. Designed a hybrid AI system featuring:

- Agentic Tool Use: Real-time microservice integration for appointments, vehicle tracking, and work logs
- RAG Pipeline: Pinecone vector database with sentence-transformers for knowledge retrieval

The agent autonomously routes between RAG for static information and tool execution for dynamic operations, enabling seamless customer support.

Interactive AI-Powered Developer Portfolio with Intelligent Assistant

Developed a full-stack portfolio website using Next.js 15, React 19, TypeScript, and Tailwind CSS with an embedded AI chatbot powered by Google Gemini 2.5 Flash API. Implemented a custom RAG-based assistant providing real-time responses about professional experience and skills. Features include programmatic email delivery via Resend API, Framer Motion animations, responsive UI/UX design, dynamic project showcases, and seamless API route handling for chat and email functionalities

Intelligent Medical Assistant Chatbot with RAG Architecture

Developed an AI medical assistant in Python using LangChain and RAG architecture. The system processes medical PDFs through DirectoryLoader, chunks text with RecursiveCharacterTextSplitter (500 tokens, 20-token overlap), and embeds using HuggingFace's all-MiniLM-L6-v2. Vector representations are indexed in Pinecone for semantic search. The Flask application integrates Google Gemini 2.5 Flash API, retrieves top-3 relevant documents, and generates medical responses with real-time processing and error handling.

Neural Network Architectures: CNN & RNN Implementations

>**Deep CNN Emotion Recognition System** :Binary CNN classifier using TensorFlow/Keras for happy/sad facial expression detection. TensorBoard monitoring and Streamlit deployment with real-time image upload and confidence scoring.

>**CIFAR-10 Multi-Class Image Classifier**: Sequential CNN model classifying 10 object categories from CIFAR-10 dataset. Conv2D layers with MaxPooling.

>**Shakespearean Text Generation with RNN** :Character-level RNN/LSTM trained on Shakespeare's corpus for poetic text generation. Streamlit interface with temperature-controlled sampling and custom seed prompt capabilities.

SKILLS

AI / ML: RAG, FAISS, LangChain, LangGraph, LLMs, CNNs, RNN/LSTM

Backend: Python, FastAPI, Flask, .NET

Frontend: Angular, Next.js, React, Streamlit, HTML, CSS, JavaScript

Databases: MongoDB, MySQL, Pinecone, MSSQL

Programming: Python, Java, C, C#

Tools: Git, GitHub, ClickUp

NON TECHNICAL SKILLS

Effective communication, Problem solving & Critical thinking, multi-tasking, time management, Team work & collaboration.

ADDITIONAL ACTIVITIES

- SpiritX 2025 (Stage 1) – Inter-University Development Competition | Xcelerate 2025 – Team Innovexa (MoraSpirit 360) | MoraXtreme 9.0 (2024) – Coding Competition Participant | FIT CodeRush 2023 – INTECS | Committee Member – NFB Championship 2024 (IEEE) | Volleyball Champion – Freshers' Meet 2023 | FIT Future Careers 2024
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REFERENCES

Ms. Roshani Wijesuriya

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