LOGANATHAN THUSHARKANTH

AI & Data Science Undergraduate

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PROFILE SUMMARY

Passionate AI & Data Science undergraduate with hands-on experience building intelligent systems using **Large Language Models (LLMs), Retrieval-Augmented Generation (RAG), and multi-agent architectures**. Experienced in designing and implementing **AI pipelines, vector search systems, and tool-driven workflows** for real-world applications. Skilled in **Python, LLM integration, and system-level AI development** using frameworks such as **LangGraph and LangChain.** Driven to develop scalable AI solutions that bridge machine learning, automation, and modern LLM technologies to solve practical industry challenges.

EDUCATION

BSc (Hons) Artificial Intelligence & Data Science *2023(September)-present*

Informatic Institute of Technology (IIT) Affiliated with Robert Gordon University, Scotland, UK

2nd Year

- Machine Learning - **A**
- Object-Oriented development - **C**
- Advance mathematics - **B**
- Data Engineering - **C**
- Simulation & Modeling Techniques - **C**
- Artificial Intelligence - **D**
- Data Science Group Project - **C**

1st Year

- Programing Fundamental - **A**
- Database System - **B**
- Computer System Fundamentals -**B**
- English Communication Skills - **B**
- Data Structures & Algorithms for Artificial Intelligence - **B**
- Web Technology - **B**
- Computational Mathematics - **C**

G.C.E Advanced Level - Badulla Central (BMMV) *2022(2023)*

- Studied in **Physical Science stream (Combined Mathematics)** and passed all 3 subjects with the grading of 1B 2S.

G.C.E Ordinary Level - Sussex College Badulla *2018*

- Passed in all 9 subjects with the results of **3A 1B 5C**

Diploma in Software Engineering (DISE) – Esoft Metro Campus *2019*

PROFESSIONAL EXPERIENCE

AI/ML Engineer Intern *2025 (Sep) – present*

MintHRM - Colombo, Sri Lanka

- Designed and implemented a **RAG-based HR chatbot pipeline**, integrating document ingestion (**Docling**), **advanced chunking, embedding generation, vector database, and hybrid retrieval strategies.**
- Researched, architected, and developed a **LangGraph-based multi-agent system** (POC) featuring **supervisor-agent orchestration, specialized sub-agents, structured graph workflows (nodes/edges), tool routing, session-based memory, and human-in-the-loop interaction checkpoints.**
- Engineered **tool-calling and function-calling pipelines**, enabling controlled LLM task delegation, external API integrations, and deterministic workflow execution.
- Integrated and evaluated open-source LLMs **(LLaMA 3, Qwen via Ollama**), applying prompt engineering and tool-selection refinement for improved reliability.
- Built and exposed backend services using **APIs**, containerized components with **Docker**, and extended workflows with **multimodal** capabilities (**OCR, Speech-to-Text, Text-to-Speech**).
- Produced technical **documentation** and presented the multi-agent architecture POC to internal stakeholders.

PROJECTS

LawBot — AI Legal Assistant (Independent Project) *2026 - PRESENT*

Technologies: RAG, Hybrid Search, LLM, Vector Database

LawBot is an AI-powered legal assistant currently in the R&D phase, focused on improving public access to Sri Lankan law through a conversational interface designed for non-legal users. The system is being architected using a **retrieval-augmented generation (RAG)** approach with **hybrid search** and structured legal knowledge modeling. Ongoing work includes evaluating **LLM-based reasoning**, contextual response generation, and scalable deployment planning, with a roadmap toward web and future mobile application development.

Edge AI-Based Real-Time Arrhythmia Detection (Team Project) (R&D Phase) *2026–PRESENT*

Technologies: ECG Signal Processing, Supervised ML, Edge AI, Embedded Systems

Designing a real-time, edge-deployable arrhythmia detection system using ECG signals. Implementing heartbeat segmentation, feature engineering, and supervised ML for abnormal rhythm classification, with planned Raspberry Pi–based deployment and ECG–SpO_2 data integration for improved reliability.

Comprehensive Chemical Risk Management System CCRMS (Team Project) *2025*

Technologies: HTML, CSS, JavaScript, Python, Colab, Machine Learning

Developed a Neural Network model (95% accuracy) for predicting future chemical risks, handling model selection, preprocessing, and visualizations. Managed backend in Python and integrated with a React frontend via REST API.

Weather Data ETL Pipeline with Apache Airflow (Individual Project) *2025*

Technologies: Python, Apache Airflow, AWS EC2, S3, OpenWeatherMap API

Developed an automated hourly ETL pipeline using Python and Airflow to fetch, transform, and store real-time weather data in AWS S3 with reliable, timestamped processing.

Fuzzy Logic-Based Anomaly Detection in Smart Grids (Individual Project) *2025*

Technologies: Python, Manual Fuzzy Logic, Rule-Based Reasoning, Simulation Testing

Built a custom Python fuzzy logic system to detect voltage, frequency, and load anomalies, with manual modules and simulations ensuring accurate, real-time decision-making.

Bank Marketing Classification System (Individual Project) *2024*

Technologies: Python, Google Colab, Random Forest, Neural Networks

Built ML models on the Bank Marketing dataset (41,188 records, 21 features), achieving 91.81% accuracy with Random Forest and 89.62% with Neural Networks. Handled full preprocessing, training, evaluation, and reporting using Python in Google Colab with Scikit-learn and TensorFlow.

TECHNICAL SKILLS

- **Programming Languages**
  Python, Java, R
- **Cloud & Deployment**
  AWS (EC2,RDS,S3), Docker
- **Databases & Data Stores :**
  PostgreSQL, MySQL, MongoDB, Redis, Supabase
- **Web Development**
  HTML, CSS, JavaScript
- **Tools:**
  Git, LangSmith, Google Colab, PyCharm, VS Code
- **Machine Learning/AI**
  TensorFlow, PyTorch, Scikit-learn, Keras, XGBoost, Pandas, NumPy
- **LLM & Agent Frameworks:**
  LangChain, LangGraph, Retrieval-Augmented Generation (RAG), Agentic AI, Tool / Function Calling, Embedding Models, Vector Databases (Chroma, Qdrant)
- **Data Visualization:**
  Matplotlib, Seaborn

EXTRACURRICULAR ACTIVITIES

Volunteer, IIT Pongal 2025 (Narunthingal) | Logistics & Decoration Team *2025*

- Assisted in organizing logistics and contributed to the decoration of the event, helping to execute a successful cultural event.

Chairperson, Tamil Literary Association (Sussex College, Badulla) *2018*

- Served as the founding chairperson, leading events and initiatives to promote Tamil language and literature in the school.

Captain, Cricket & Volleyball Teams (Sussex College, Badulla) *2017 - 2018*

- Led both the cricket and volleyball teams, representing the school in district, zonal, inter-Sussex, and inter-school competitions, achieving top placements in multiple tournaments.

CERTIFICATE AND SOCIETIES

- **Member**, IEEE (Institute of Electrical and Electronics Engineers) *2025*
- **Member**, IEEE Robotics and Automation Society (RAS) *2025*
- **Machine Learning with Python**: Foundations by Frederick Nwanganga – LinkedIn Learning *2025*
- **Build AI Agents and Chatbots with LangGraph:** Kumaran Ponnambalam – LinkedIn Learning *2025*

REFERENCES

Prashan Rathnayaka
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