

NIDHUSHAN RAJENDRAN

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Summary

AI/ML Engineer with hands-on industry experience as a Machine Learning Engineer Intern, specializing in Agentic AI, LLM applications, backend engineering, and AI deployment. Skilled in developing AI-powered chatbots, workflow automation systems, and scalable backend services using FastAPI, LangGraph, Docker, and modern AI frameworks. Passionate about building intelligent systems using Machine Learning, Generative AI, and Large Language Models to solve real-world problems.

Experience

Machine Learning Engineer Intern – SenzMate IoT Intelligence

Nov 2025 – May 2026

Agentic AI & Backend Engineering

- Contributed to the development of AI-powered enterprise applications focused on Agentic AI systems, LLM applications, workflow automation, and scalable backend services.
- Designed and implemented LangGraph-based multi-agent chatbot workflows and scalable FastAPI backend APIs to support intelligent automation and AI-driven interactions.
- Developed configurable AI chatbot frameworks supporting multiple chatbot types, custom workflows, and user-specific behaviors for enterprise use cases.
- Built and deployed production-ready AI services using Docker, Nginx, and SSL configuration, improving deployment reliability and backend service management.
- Developed retrieval pipelines, AI agent workflows, and automated report generation systems for an Agentic AI financial analysis platform.
- Integrated PostgreSQL, Neo4j, and vector-based retrieval systems to support scalable AI workflows and contextual information retrieval.
- Performed API integration, backend testing, debugging, and load testing to improve system stability and performance for AI-driven financial applications.
- Collaborated on backend system development using Python, FastAPI, LangGraph, Docker, and LLM-based architectures to build scalable AI solutions.

AI Research Intern – University of Jaffna

Oct 2023 – Feb 2024

- Designed and implemented deep learning models for automated classification of diabetic retinopathy stages.
- Deployed the models on Hugging Face to enable real-time, publicly accessible inference and demonstration.
- Published findings in the paper: *"Deep Learning Models for Automatic Diabetic Retinopathy Detection"*.

Education

University of Jaffna

April 2022 – July 2026

B.Sc Eng (Hons) in Computer Engineering

Machine Learning, Deep Learning, Embedded Systems, Artificial Intelligence, Robotics, Software Engineering, Database Systems.

Projects

Agentic AI Trip Navigator Full Stack AI Application

[GitHub](#)

- Developed an Agentic AI-powered travel planning platform that generates personalized trip itineraries based on destinations, travel dates, budgets, and user preferences.
- Designed and implemented LangGraph-based multi-agent workflows for destination research, itinerary generation, travel recommendations, and trip planning automation.
- Built a scalable FastAPI backend to orchestrate AI agent workflows and provide RESTful APIs for seamless frontend integration and real-time itinerary generation.
- Integrated React frontend components with AI-powered backend services.
- Technologies used: React, FastAPI, LangGraph, LangChain, OpenAI API, Python, and Vite.

Federated semi-supervised learning for medical image analysis

- An ongoing research project focused on developing a privacy-preserving framework that integrates Federated Learning (using Flower) with Semi-Supervised Learning (Mean Teacher approach) to enhance skin cancer classification from dermatological images.
- Addresses the challenge of limited labeled medical data by leveraging semi-supervised learning for improved generalization.

Khalefit MERN Full Stack Application

[GitHub](#)

- Developed a MERN-based fitness coaching platform featuring personalized workout recommendations, health tracking, JWT authentication, role-based dashboards, and scalable RESTful API integration.
- Technologies used: React, Node.js, Express.js, MongoDB, JWT Authentication, and REST APIs.

GEN AI Database QA Tool

[GitHub](#)

- Built using LangChain and OpenAI API to translate natural language into SQL for relational databases.

Generative AI-Powered Log Classification System

[GitHub](#)

- Integrated LLMs, Regex, Sentence Transformers, DBSCAN clustering, and Logistic Regression for hybrid log analysis.

News Articles Q&A Tool with LangChain

[GitHub](#)

- Automated Q&A tool for news articles using LangChain and LLMs.

Publications

R. Nidhushan, “Deep Learning Models for Automatic Diabetic Retinopathy Detection,” in *Proc. Int. Conf. Eng. (ICE)*, Jaffna Univ. Int. Conf. Eng. (JUICE), Jaffna, Sri Lanka, 2024.

Skills

Programming & Scripting: Python, Java, JavaScript, SQL, C/C++

AI/ML & Generative AI: Machine Learning, Deep Learning, NLP, LLMs, Generative AI, Agentic AI, RAG Systems, Prompt Engineering, AI Agents, Explainable AI

AI Frameworks & Libraries: LangChain, LangGraph, Hugging Face, TensorFlow, PyTorch, Scikit-learn, Keras, OpenCV, MLflow, Flower, CrewAI, Streamlit

Backend & API Development: FastAPI, Node.js, Express.js, Backend System Design, Workflow Automation

Databases & Vector Systems: PostgreSQL, Neo4j, MongoDB, Vector Databases

Cloud, DevOps & Deployment: Docker, Nginx, AWS, Git, GitHub, Linux

Web & Application Development: React, MERN Stack, Flutter

Data Engineering & Workflow Orchestration: ETL Pipelines, Apache Spark, Apache Airflow, n8n

Tools & Platforms: Postman, Power BI, JMeter

Soft Skills: Problem Solving, Communication, Collaboration, Teamwork, Leadership, Project Management

Key Certifications

- **Generative AI with Large Language Models** — AWS
- **Machine Learning Specialization** — Stanford University
- **Programming in Python** — Meta

Professional Affiliations

- **Member**, Institution of Engineers, Sri Lanka (IESL)
- **Member**, IEEE (Institute of Electrical and Electronics Engineers)

References

Dr. Mukunthan Tharmakulasingam

Senior Lecturer

Dept. of Electrical and Electronic Engineering

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Dr. Jananie Jarachanthan

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