

# LAKSHAN.A.S

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## SUMMARY

Seeking to leverage expertise in AI development, cloud computing, and real-time monitoring to drive innovation and efficiency. Familiar in AWS, database management, machine learning, and Kubernetes for containerized applications. Skilled in designing scalable solutions, optimizing system performance, and leveraging data-driven insights to enhance decision-making.

## PROFESSIONAL EXPERIENCE

### AI Engineer Intern

KnackForge

Chennai, Tamil Nadu | 06, 2025 – Present

- Contributed to the end-to-end development of a Retrieval-Augmented Generation (RAG) system for intelligent PDF-based question answering.
- Engineered scalable pipelines using LangChain, ChromaDB, and Supabase pgvector for efficient document ingestion, chunking, and semantic retrieval.
- Implemented core features including multi-library management, persistent chat history, and context-rich querying using Llama 3.3.
- Designed and developed a responsive frontend with React, Vite, and Tailwind CSS, incorporating intuitive chat and library navigation.
- Integrated backend services using FastAPI and Supabase Edge Functions, enabling secure file uploads, embedding generation, and real-time inference.

Tech Stack: Python, React, LangChain, Supabase, ChromaDB, Llama 3.3, PyMuPDF, FastAPI, TailwindCSS

## PROJECTS

### Kubernetes Anomaly Detection and Remediation System (KubeScape)

- Built a multi-agent system for real-time anomaly detection in Kubernetes clusters.
- Created algorithms identifying OOM risk, resource exhaustion, crash loops, deployment issues, and scaling problems.
- Implemented an interactive dashboard with time-series metrics tracking and cluster topology mapping.
- Integrated Llama 3.3 LLM for root cause analysis and remediation recommendations.
- Established a validation system ensuring appropriate remediation actions based on anomaly type.

### Stock Market Price Prediction and Analysis

- Developed an AI-powered solution for predicting stock prices using deep learning models.
- Implemented LSTM and GRU-based neural networks to forecast future stock trends with high accuracy.
- Integrated real-time stock data retrieval, technical indicators, and price movement analysis for informed decision-making.
- Enhanced trading strategies by leveraging predictive analytics and interactive data visualizations.

### Real-Time AI-Based Road Surface Classification Using Embedded Acoustic Systems (ESP32)

- Developed a real-time AI-based road surface classification system using embedded acoustic systems.
- Utilized ESP32, Arduino IDE, FreeRTOS, and Supabase to analyse road textures through microphones and vibration sensors.
- Processed acoustic data to detect potholes, cracks, and rough surfaces, aiding in road maintenance planning.
- Aimed to enhance smart city infrastructure by providing real-time insights into road conditions using embedded systems.

### Real-Time KPI Monitoring for Environmental Insights (ESP32)

- Designed and developed a real-time monitoring system using ESP32 to track key performance indicators (KPIs) for environmental conditions.
- Integrated IoT sensors (MH-Z19E and MQ-135) to measure CO<sub>2</sub> levels and air quality.
- Applied a custom KPI calculation algorithm to provide actionable insights.
- Leveraged cloud-based data management for real-time visualization and analytics.
- Demonstrated expertise in IoT, sensor integration, FreeRTOS-based task scheduling, and real-time data processing for smart environment applications.

## SKILLS

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**Programming Languages:** C & C++, Python, MySQL

**Frameworks:** TensorFlow, OpenCV, NumPy, Pandas, Keras, FastAPI, LangChain, LangGraph

**Tools:** Kubernetes, AWS, Arduino IDE, Docker, GitHub, Supabase, Model Context Protocol

## EDUCATION

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**Narayana E-Techno School** Chennai, Tamil Nadu | 04, 2015 - 2020

Class X | 90.2%

**Narayana Olympiad School** Chennai, Tamil Nadu | 04, 2020 - 2022

Class XII | 85%

**SRM Institute of Science & Technology** Chennai, Tamil Nadu | 09, 2022 - Present

Bachelor of Technology in Electronics & Computer Engineering

CGPA: 8.175 / 10

## CERTIFICATIONS

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- AWS Cloud Foundations
- AWS Cloud Architecture
- GOOGLE AIML Virtual Internship (AICTE)
- PALO ALTO Cyber Security Virtual Internship (AICTE)

## HACKATHONS

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### Tata Steel Tomorrow Lab 2023 – BeyondBricks (Participation)

- Contributed to designing a sustainable and refurbish able housing model for affordable shelter solutions.
- Proposed modular housing concepts requiring refurbishing every 10 years.
- Addressed challenges in employment generation, supply chain risks, and long-term housing viability.

### Smart India Hackathon (SIH) 2024 (Participation)

- Problem Statement ID: SIH1638
- Title: AI-Driven Crop Disease Prediction and Management System
- Theme: Agriculture, Food Tech & Rural Development
- Category: Software
- Ideated the concept of Smart Agriculture Forecasting Engine (S.A.F.E), an AI-based solution for crop disease detection and management.
- Explored potential machine learning techniques for analysing crop health using image and environmental data.

### Guidewire DevTrails 2025 (Top 5 Finalist)

- Developed an AI-driven system for predicting and mitigating Kubernetes cluster failures.
- Implemented time-series forecasting and anomaly detection for system reliability.
- Integrated Prometheus and Grafana for real-time monitoring of cluster performance.
- Worked on a AI-based remediation system for proactive failure resolution.

## POSITIONS HELD

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**Club Radiance | HR Lead** Chennai, Tamil Nadu | 09.2023 - Present

- Elected to lead Club Radiance's first team as an HR, supporting youth development in UHV.
- Assembled and managed individuals to promote well-being and collaboration in alignment with UHV.
- Dedicated 15 hours weekly to organizing workshops and events, achieving two successful outcomes in 2024.

**RAEEUCCI-2024 | Public Relations** Chennai, Tamil Nadu | 04.2024

- Managed communication and outreach to enhance event visibility and engagement.
- Coordinated with teams to ensure smooth execution of promotional activities.
- Strengthened networking and collaboration with participants and stakeholders.

**Directorate of Student Affairs (DSA) | Member** Chennai, Tamil Nadu | 07.2023 - Present

- Managed the execution of major student events like Milan, Jhalak, Shuru, and Road Shows.
- Coordinated with teams to ensure smooth event planning and operations.
- Facilitated communication between students and administration for effective event management.

