

Kalyan Mudumby

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EDUCATION

Northeastern University

Masters of Computer Science

Boston, MA

August 2025 - Present

Geethanjali College of Engineering and Technology

Bachelor's in Electronics and Communication Engineering

Hyderabad, India

August 2019 - May 2023

SKILLS

Languages: Java, Python, Rust, TypeScript, JavaScript, SQL, Google Apps Script, C, C++

Frameworks: LangChain, LangGraph, PyTorch, Tensorflow, Hibernate, Spring Boot, Angular, Flask, FastAPI, Streamlit, ChromaDB

Developer Tools: Microsoft Azure, Git, Linux, Docker, Kubernetes, Postman, Open Telemetry, Cloudflare, NixOS

Libraries: NumPy, Matplotlib, pandas

EXPERIENCE

Software Engineer

Nebulogic Technologies

June 2022 – July 2025

Hyderabad, India

- **Developed SAIC (SMART AI Chat)**, a **Generative AI** application for the City of Fort Wayne, designed to enhance public accessibility by providing relevant and detailed summaries to frequently asked questions. Built using **LangChain** over **OpenAI API**, the application enables residents to quickly access relevant information, enhancing user engagement with city resources through the **City's 311 Portal**
- **Optimized Applications** Reduced final build size by **60%** and **improved load times by 5x** (30 seconds to 7 seconds) through asset compression (gzip, brotli) and configuring angular build system, **enabled response compression** on backend applications, reducing response size by **50%**, reducing the time to download the response by **60% - 90%** from **2 - 0.8 sec** for larger payloads
- Introduced **Stateful Application Synchronization** using **Redis Pub-Sub** eliminating application restarts for application restarts after a configuration change
- Introduced **Redis Cache Pipelining** Achieved up to **100x time reduction** from 20s - 200ms cache load performance during application cold starts.
- **Implemented Cache Control and Cloudflare CDN Proxy** Achieved up to **70% reduction in request load** for frequent static requests, **optimized Nginx** configuration to achieve a **cache hit ratio of 80%** on Cloudflare, enhancing user experience and load speed across client applications.
- **Enhanced CI/CD with Docker Multi-Stage Builds**, Achieved 100% reproducible builds on GitLab CI for over 40 applications, improving deployment reliability.

Web Administrator

GCTCPORTAL

December 2021 – May 2023

Hyderabad, India

- Maintained **GCTCPORTAL** for **Geethanjali College of Engineering and Technology**, providing timely updates to a community of over **7,000+ students and alumni**.
- Developed **4+ College Fest**, **2 College Conference** websites for the college
- Developed an internal automation tool that integrates the **Telegram Bot API**, **Blogger**, and **Google Drive API**, streamlining workflows and reducing task completion time from **10 minutes to just 30 seconds**, a **95% improvement in efficiency**

PROJECTS

Hikari — GitHub | Rust, Docker, WebSockets, PostgreSQL, RESTful API

September 2024 – April 2025

- **Developed open-source GitOps Tool** Hikari in Rust as a **lightweight Kubernetes alternative** for small-scale setups, automating Docker container lifecycle management across VMs with **centralized JSON configurations** in daemon-mode using **AES-256 encryption** via OpenSSL for centralized secrets management
- **Engineered secure, asynchronous architecture** using WebSockets to manage **1000+ nodes** in agent-server mode with intelligent change detection and state propagation using PostgreSQL/SQLx for persistent state tracking

- **Built comprehensive CLI and API** interfaces for operational commands (encrypt/decrypt/dry-run validation) and Axum framework for RESTful endpoints with WebSocket support, enabling both automated deployments and real-time monitoring
- **Implemented intelligent dynamic stack management** system that generates Docker Compose files on-the-fly from JSON definitions, applies minimal necessary updates to reduce service disruption, and maintains complete deployment history for rollback capabilities

Autodeploy — GitHub | *Rust, Docker, CLI, TUI, TOML, YAML*

September 2023

- **Engineered a CLI automation tool in Rust** that integrates Git repository management and Docker containerization, through an interactive user interface, streamlining local deployment workflows and reducing manual setup time for developers from 2hrs to 20 minutes
- **Designed a Dynamic Configuration** system using TOML to automatically generate Docker Compose YAML spec files at runtime to support complex, multi-service application deployments.
- **Implemented End-To-End Container lifecycle management** through unified Rust application interface, orchestrating Git repository operations and Docker Compose commands for automated service deployment.

Fetal Health Classification — GitHub | *TensorFlow, Pandas, NumPy, SciPy*

April 2023

- This project focuses on developing a machine learning model to **classify fetal health risks based on Cardiotocogram (CTG) data**, potentially reducing fetal mortality. Built using **Python with SciKit Learn and SciPy**, the solution involved extensive data cleaning, preprocessing, and evaluation across multiple algorithms (e.g., KNN, Linear Regression). The **final model achieved a 97.8% accuracy**, selected based on metrics such as precision, recall, and F1 score. The application's front-end is **built with Angular and Flask**, handling the backend, and the entire system is **deployed on Docker for scalability and replicability** in clinical settings.

Documan - Digital Library | *Python, PostgreSQL, Flask, Jinja, Linux*

June 2020 – May 2025

- **Architected and scaled Documan digital library** platform serving **4,000+ Campus Students** with **200,000+ file deliveries**, implementing an efficient file storage/retrieval system and content delivery architecture to handle 2000+ educational resources, including notes, course files, and lab files
- **Enabled multi-platform access** with a responsive web interface and interactive Telegram bot, achieving 1,400+ registered users through seamless cross-platform authentication and unified backend design for consistent user experience
- **Built Robust Content Management Infrastructure** with categorized file organization, search capabilities, and access control mechanisms, maintaining **99%+ uptime over 2-years** of production deployment while handling **concurrent requests from 1,200+ active users**
- Implemented efficient file delivery strategy with optimized caching strategies, bandwidth management, and automated backup systems, enabling reliable distribution of academic materials while reducing storage costs and improving average file retrieval times

LEADERSHIP & ACHEIVEMENTS

Star of the Month | **May 2024, Feb, Sep, Oct 2023**

Nebulogic Technologies

Hyderabad, India

Vice Chair, Technical Activities

2022 - 2023

IEEE Signal Processing Society GCET SBC

Hyderabad, India

- **Conducted 20+ events**, introducing automated certificate generation through **Google Scripts** and implementing QR-based feedback forms, **enhancing participation and engagement**.

Entrepreneur Leader

2022 - 2023

National Entrepreneurship Network (NEN)

Hyderabad, India

- **Organized annual entrepreneurship events** with over **200+ participants**. Mentored **20+ students** and maintained the organization's website for improved digital presence.