THULASIRAM K

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EDUCATION

Chennai Institute of Technology 2024 – 2028
B.E. Computer Science Engineering (AI & ML) *CGPA: 7.50*

PROFESSIONAL EXPERIENCE

Presidio, PRIME Internship Program Jun 2026 – Jul 2026
Software Engineer Intern *Chennai, India*

- Built **StudyFlow AI**, a **3-microservice** learning platform (**React**, **Spring Boot**, **FastAPI**) on **AWS ECS Fargate**, **RDS PostgreSQL** and **CloudFront**; served **3.3K+ API calls** in a one-week pilot.
- Provisioned infrastructure with **13 Terraform modules** and **GitHub Actions** CI; backend pipeline runs in under **3 min**.
- Built a **4-agent LangGraph** AI service; the RAG agent (**FAISS**, **Llama 3.1 8B**) scored **14/15** answer recall and **15/15** faithfulness, and the guardrail blocked **20/20** prompt-injection attacks.

Amazon Machine Learning Summer School (MLSS) Jul 2026 - Aug 2026
Selected Participant *Virtual*

- **Amazon ML Challenge 2026** (team): built an **ML entity resolution** pipeline across 3 sources, scoring **0.944 F0.5**.
- Completed **8 modules**: supervised and unsupervised learning, **deep neural networks**, sequence models and **RL**.
- Studied **causal inference**, **Generative AI** and **LLMs** through Amazon case studies of ML at scale.

Cloud Computing CoE, Chennai Institute of Technology Nov 2025 – Dec 2025
Winter Program Intern *Chennai, India*

- Developed **SysDash**, a real-time system monitoring dashboard with a concurrent **Go** backend over **WebSockets**.
- Published **sysdash-cli** on **PyPI** (**4.1K+ downloads**, 7 releases), a terminal dashboard with live graphs.

PROJECTS

Machine-Guard-AI: Industrial Predictive Maintenance (Team) | *Python, Flask, MQTT, Kotlin* | GitHub 2026

- Streamed ESP32 sensor data (temperature, vibration, gas, power) over **MQTT** and replaced fixed alarm limits with **unsupervised anomaly detection**, reaching **94%** detection on held-out faults.
- Built a per-machine **digital twin** to predict failures; anomaly scores trigger load control and **safety shutdowns**.
- Served data via **Flask REST APIs** to a **Kotlin Android app** with role-based, zone-level access control.

ArkaOS: Privacy-First Immutable Linux OS | *Rust, bootc, KDE Plasma, Linux* | GitHub 2025

- Built an immutable Linux desktop (**bootc**, **composefs**) with **atomic updates** and **rollback**; booted on real laptop hardware.
- Wrote **arkad**, a **Rust D-Bus daemon** enforcing random MAC, encrypted DNS and IPv6 privacy, re-checked every **60s**.
- Sandboxed Firefox with **bubblewrap** (no home or D-Bus access) and built **arka-pulse**, a Rust system health monitor.

VARA: Distributed Version Control System | *Go, SHA-256, zstd* | GitHub 2026

- Built a content-addressed VCS in **Go** with a **write-ahead journal**, keeping repos consistent after any crash.
- Implemented **three-way merge** (Myers diff, zdiff3) with **JSON/YAML/TOML** structural merge and conflict resolution.
- Added a binary **commit graph index** that cut history on 10K commits from **75.8s to 16ms**; fuzz-tested all parsers.

TECHNICAL SKILLS

Languages: Python, C/C++, Java, Rust, Go, SQL, JavaScript **Web:** HTML, React, Spring Boot, PostgreSQL
Data Science & ML: scikit-learn, PyTorch, pandas, NumPy, XGBoost, anomaly detection, model evaluation
LLMs & Agents: multi-agent pipelines, LangGraph, RAG, FAISS, embeddings, Ollama, prompt engineering, output validation
MLOps & Cloud: FastAPI, Docker, AWS (ECS, RDS, S3), Terraform, Git, GitHub Actions, microservices, MQTT, Linux

ACHIEVEMENTS

- **Winner**, AI for Sustainability 2026 (International, Canadian University Dubai) among **50+** finalist teams.
- **2nd Runner-Up**, TI Forge (**Rs. 50,000**) out of **1,500+** registrations · **Top 10**, TGF 2.0 Google TechSprint.
- **Open Source:** merged PR **#5686** in **AWS s2n-tls** (C) · SWoC 6.0 and Elite Coders WoC 2026 contributor.

CERTIFICATIONS

- **Minor in CSE & Advanced Technologies**, IIT Mandi (2025–26): programming, DSA, systems and databases.
- **AI/ML using Python**, IITM Pravartak, 88% (2025): Python, data visualization, statistics and ML models.
- **AWS Cloud Practitioner Essentials**, AWS (2025): core AWS services, security model and pricing.
- **Introduction to IoT (Elite, 75%)**, NPTEL, IIT Kharagpur (2025): sensors, MQTT, IoT networks and cloud computing.
- **Foundations of Business Intelligence**, Google (2025): BI metrics, dashboards, reports and data pipelines for stakeholders.