



Vignesh Thanigaivel
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🌐 Portfolio: vigneshta.com
leetcode.com/u/tavignesh
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EDUCATION

- **Vellore Institute of Technology, Vellore** 2026
B.tech Electronics and Communication Engineering with specialization in Biomedical Engineering CGPA: 8.04
- **Atomic Energy Central School, Anupuram** 2022
Central Board of Secondary Education (CBSE) - Computer Science Percentage: 93.6

TECHNICAL SKILLS

Programming Languages: Python, Rust, C, SQL, HTML, CSS, Assembly, Verilog, Matlab, R

Frameworks & Libraries: AWS, LangChain, LangGraph, ChromaDB, Ollama AI, RAG, NoSQL - MongoDB, Nginx, REST API, Docker, Django, Discord.py

Additional Proficiencies: Data Structures and Algorithms, Server Design and Administration, SSH, Linux, Load Management, Multi-threading, OOP, Version Control (Git)

Soft Skills: Public Speaking, Delegation, Collaboration, Diligence, Result Oriented, Flexible

Languages: English, Hindi, Tamil, German

PERSONAL PROJECTS

- **Scalable Linked NGINX RTMP-Based Multi-Endpoint Live Video Restreaming System** [Project Link]
 - Engineered a scalable RTMP restreaming pipeline using NGINX and the RTMP module for real-time adaptive live stream replication.
 - Deployed custom CDN cache nodes to distribute video streams efficiently across edge servers, reducing server load.
 - Emphasized low-latency routing, load balancing, and modular configuration for fault-tolerant, infrastructure-grade stream delivery.
 - Tools & technologies used: NGINX, FFmpeg, RTMP, Linux, Shell Scripting
- **Standalone GUI-Based YouTube Downloader with Multi-Format Support and Encoding** [Project Link]
 - Built a standalone Python-based YouTube video downloader with GUI offering multiple formats and encoding options.
 - Implemented the application as packaged and standalone Windows .exe that runs independently without requiring libraries or runtime installations, ensuring portability and ease of distribution.
 - Tools & technologies used: Python, FFmpeg, requests, multi-threading, pillow
- **Modular Python Discord Bot with MongoDB Integration and External API Support** [Project Link]
 - Built a scalable, modular Discord bot in Python featuring dynamic user commands, role management, and real-time interactions.
 - Integrated MongoDB for persistent configuration and used external APIs for features like content delivery and live info retrieval.
 - Tools & technologies used: Python MongoDB, REST APIs, Discord.py, Asynchronous Programming
- **Offline AI Summarization & Q/A System (LangGraph + Ollama)** [Project Link]
 - Built a fully offline, context-aware summarization and Q/A system using LangGraph with locally hosted LLMs via Ollama.
 - Designed modular agentic workflows with supervisor coordination, supporting summarization, document-level Q/A, and follow-up conversations using chat-style prompting.
 - Enabled flexible processing of diverse documents with token-efficient chunking, offline & online retrieval, and dynamic flow control—all without requiring internet access.
 - Tools & technologies used: Python MongoDB, REST APIs, Discord.py, Asynchronous Programming
- For more Projects - vigneshta.com/projects [Link]

WORK EXPERIENCE

- **Indira Gandhi Centre for Atomic Research [IGCAR]** Jun. 2024 - Jul. 2024
Kalpakkam, Tamil Nadu
Wireless Sensor Networks (Offline Internship)
 - Designed, deployed and analyzed a packet loss testing system using 25 Zigbee modules arranged in a dynamic mesh topology.
 - Programmed SAMD20 Cortex-M0+ microcontrollers using Keil IDE to analyze communication reliability and performance under varying conditions.
 - Applied IEEE 802.15.4 protocols, embedded system design principles, and multi-core architecture experience.
- **RC Studios** Jul. 2024 - Aug. 2024
Coimbatore , Tamil Nadu
Server Design & Administration (Hybrid Internship)
 - Built a scalable streaming server infrastructure using NGINX and FFmpeg, supporting multi-resolution RTMP output and adaptive HLS playback.
 - Implemented load distribution and stream handling strategies to ensure reliable performance under high concurrent traffic.
 - Focused on system-level optimization, real-time video routing, and efficient resource management for seamless content delivery.
- **Freelance** Jun. 2023 - Present
Server Administrator (Hybrid)
 - Planned, deployed, and maintained production-grade servers across hybrid environments, ensuring high availability and fault tolerance.
 - Implemented load balancing, traffic shaping, and monitoring solutions to optimize infrastructure under varying workloads.
 - Ensured compliance with security standards, validation protocols, and performance benchmarks for robust, scalable deployment.
- **Freelance** Mar. 2023
Web Design (Online)
 - Designed and hosted secure, scalable web infrastructures with focus on reliability and performance.
 - Integrated SSL/TLS encryption, data caching, custom HTTP server configs, and DNS management for secure domain handling.

CERTIFICATIONS & ACHIEVEMENTS

- **AWS Cloud Certified Practitioner** View Credential
2025
AWS Training & Certification
- **RAG and Agentic AI Professional** View Credential
2025
IBM
- **Generative AI Leader** View Credential
2025
Google
- **IBM Cloud** View Credential
2025
IBM
- **Rust Fundamentals** View Credential
2025
Duke University
- **Python for Data Science** View Credential
2023
IIT Madras
- **Best Paper Award** View
2023
International Conference on Next Generation Electronics (NEleX)
- **430+ Leetcode Daily Coding Challenge Streak** View
2024-2025
Leetcode
- For more Certifications - vigneshta.com/certification [Link]

PUBLICATIONS

- **Cloud-Controlled Dynamic Smart Street Lighting System (Best Paper Award)** 16 Feb. 2024
2023 International Conference on Next Generation Electronics (NEleX)
DOI: 10.1109/NEleX59773.2023.10420861 [Link]
- **IoT and Cloud based Automated Irrigation System** 02 Jul. 2024
2024 3rd International Conference on Artificial Intelligence For Internet of Things (AIoT)
DOI: 10.1109/AIoT58432.2024.10574611 [Link]