Vignesh Thanigaivel

B.tech Electronics and Communications
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🌐 Portfolio: vigneshta.com
</> leetcode.com/u/tavignesh (200+Streak)
⌗ github.com/tavignesh
in linkedin.com/in/tavignesh

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, Java, C++, JavaScript
Frameworks & Libraries: AWS, LangChain, ChromaDB, Ollama AI, RAG, NoSQL - MongoDB, Nginx, REST API, Docker, WebRTC, Socket.IO, Django, Discord.py
Additional Proficiencies: Data Structures and Algorithms, Server Design and 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]*

  – Designed and deployed a scalable live streaming system using NGINX with RTMP for adaptive stream replication, dynamic multi-endpoint delivery, and optimized failover—ensuring high performance under heavy viewer load.
  – Tools & technologies used: NGINX, FFmpeg, RTMP, Linux, Shell Scripting

• **Real-Time Proximity Voice Interaction Platform Using WebRTC, Socket.IO, and Phaser**   *[Project Link]*

  – Developed a browser-based spatial voice chat platform enabling proximity-based audio using WebRTC for P2P communication, Socket.IO for real-time avatar state sync, and Phaser 3 for 2D movement.
  – Tools & technologies used: JavaScript, WebRTC, Socket.IO, Phaser, Node.js, HTML5

• **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 via multiple external APIs and MongoDB-based persistence.
  – Tools & technologies used: Python, Discord.py, MongoDB, REST APIs, Asynchronous Programming

• For more Projects - vigneshta.com/projects [LINK]

WORK EXPERIENCE

• **Indira Gandhi Centre for Atomic Research [IGCAR]**   *Jun. 2024 - Jul. 2024*
  Wireless Sensor Networks (Offline Internship)   Kalpakkam, Tamil Nadu
  – Designed a wireless packet loss testing system using 25 Zigbee modules and a SAMD20 Cortex M0+ MCU, applying IEEE protocols, ADCs, and embedded system design across 8-bit to DSP microcontrollers.

• **RC Studios**   *Jul. 2024 - Aug. 2024*
  Server Design & Administration (Hybrid Internship)   Coimbatore , Tamil Nadu
  – Engineered an Nginx-based Linux streaming server with FFmpeg for multi-resolution RTMP output and HLS playback, incorporating load management strategies to ensure stable performance under high concurrent traffic.

• **Freelance**   *Jun. 2023 - Present*
  Server Administrator (Hybrid)
  – Executed & supervised high-integrity server deployments implementing advanced load balancing while ensuring compliance with strict validation protocols and infrastructure performance benchmarks.

• **Freelance**   *Mar. 2023*
  Website Design (Online)
  – Architected, deployed, and maintained secure web infrastructures, integrating SSL, HTTP server configurations, DNS management, and backend database systems to ensure robust and scalable online platforms.

PUBLICATIONS

•**Cloud-Controlled Dynamic Smart Street Lighting System**   *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 (AIIoT)
  DOI: 10.1109/AIIoT58432.2024.10574611 [LINK]