



## Vignesh Thanigaivel

B.tech Electronics and Communications

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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)* 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, 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]