Himanshu Tiwari

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Education

University Of Mumbai – ViMEET	Khalapur, Raigad
Bachelor Of Engineering In Electronics and Telecommunications	*Nov. 2022 – Present*

Work Experience

LIA Lab, CERI - UNIVERSITÉ D'AVIGNON   *Avignon, France*
Research Fellow   *June 2025 – July 2025*

- **LoRaPwn:** Built a custom LoRaWAN security framework with firmware-level MAC layer written from scratch, replacing AES-CTR+CMAC with ChaCha20-Poly1305 AEAD.
- Developed HAL in Rust for STM32 and bare-metal C++ drivers for mDot, enabling direct control over LoRa PHY without vendor libraries.
- Integrated CNN-based anomaly detection using signal spectrograms, achieving 10x speed and 90% energy savings in cryptographic performance.

Pravideon Pvt. Ltd   *Navi Mumbai, India*
Head Of Embedded Systems   *Oct 2024 – May 2025*

- **Nirvanagni F.L.A.M.E Guardian:** Autonomous fire suppression system utilizing computer vision and PLC integration - Led AI model development (75% accuracy/recall with 150k dataset size) and Modbus-based PLC integration, including hyperparameter tuning and dataset optimization, written in Python using TensorFlow**.**
- **Rangvarna:** Developed and led integration of custom mobile app for a portable color matching proof-of-concept device using a triad spectrometer and Raspberry Pi Zero, achieving 96% accuracy under factory conditions for paint manufacturers and quality control, resulting in enhanced search and retrieval capabilities.

Projects

Slipper Zero: WiFi Penetration Tool Based On ESP32   *C, C++, CMAKE, Esp IDF, Wireshark*

- Developed ESP32 tool for Wi-Fi attacks (PMKID, handshake captures, deauthentication, DoS).
- Integrated PCAP traffic capture, HCCAPX parsing for Hashcat.
- Developed web-based management for easy configuration.

Privacy - Pi   *OpenVPN, Tor, WireGuard, Pi-hole, Raspberry Pi, Linux*

- Developed a secure, privacy-focused networking device integrating OpenVPN, Tor, WireGuard, and Pi-hole for enhanced anonymity and encryption.
- Implemented traffic obfuscation techniques, decentralized DNS resolution with Unbound, and a Tor hotspot mode for seamless anonymous browsing.
- Configured a Raspberry Pi-based custom router with DNS-level ad and tracker blocking, ensuring secure and private communication across networks.

Auralis : Procedural Music Generation App (Music Made With Math)   *Rust*

- Developed a CLI app based on music theory to generate chord progression based on Wolfram Tones
- Made a backend for the cellular automata for music generation
- Created this project as part of buildspace nights and weekends season 5 with my buddy

Skills

- Programming Languages: **C**, Embedded C, Basic C++, Rust (Learning), Basic Assembly, Basic Bash, Python
- Computer Languages: HTML, CSS, JSON, CMake, Markdown
- Operating Systems: Linux, Windows

Achievements & Volunteering

- 3x ViSION Project Exhibition Winner and won Echelon'25
- **IEEE Xplore**: Published "Slipper Zero" at GCWOT 2024
- Apprenticeship at buildspace nights and weekends season 5
- Industry Relations Manager at Training and placement office at ViMEET
- NPTEL IIT Kanpur: Foundation of Cloud IOT Edge & ML