

Mugilarasi M S

Cybersecurity Developer & Fintech Innovator | Encryption Systems

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Summary

Innovative and security-driven developer specializing in **encryption systems and AI assistant**. Security-focused developer specializing in cryptographic systems and fintech innovation. Architect of ZeroNetPay ,a cross-platform mobile payment app enabling offline UPI transactions with HMAC-SHA256 encryption and biometric authentication. Expertise in full-stack development (Python, FastAPI), cryptography (AES, RSA, HKDF), and building privacy-first systems. Proven track record in encryption algorithm design and secure system integration

Technical Skills

Frontend: Python, JavaScript, HTML5, CSS3, SQL

Backend: Python, FastAPI, Flask, Scikit-Learn, OpenCV

Databases: MySQL, MongoDB

Tools & Platforms: Git, GitHub, VS Code

CS Fundamentals: DSA, OOP, DBMS, OS, CN

Internship Experience

Cybersecurity & Development Intern — Insprisys & MotionCut (Remote)

Dec 2023 – Jan 2025

- Worked on secure system architecture and full-stack integration for real-world cybersecurity projects.
- Implemented encryption and threat-mitigation strategies for data protection and secure user flows.
- Collaborated with a cross-functional team to enhance backend security for scalable applications

Automation & Testing Intern - Royal Enfield Headquarters (Onsite)

Dec 2025 - Dec 2025

- Automated cluster testing suite for Flying Flea (Royal Enfield's EV vehicle); designed test case validation reducing manual testing.
- Generated detailed test reports for Android Cluster firmware; identified and documented 30+ edge cases in manual testing workflow.
- Collaborated with QA team to implement automated regression testing, reducing bug detection cycle.

Major Projects

ENCOM Voice Assistant (Python, Kivy)

- Built an always-listening AI assistant with **custom voice trigger**, **emergency dial system**, and **smart safety timer**.
- Integrated voice-to-text and text-to-speech modules for seamless human-computer interaction.
- Designed a futuristic, Jarvis-inspired interface emphasizing **AI-driven accessibility**.

Proteus Encryption Algorithm (Python)

- Developed a **multi-layer encryption system** featuring DPG (Dynamic Permutation Generation), AEAD, and **Honey Engine** for deception-based security.
- Each device generates a unique fingerprint and uses **quantum-derived keys** for communication.
- Integrated deterministic key derivation (HKDF) ensuring reproducible, session-consistent keys.

FadeDrop – Encrypted File Sharing System (FastAPI, Python, HTML, CSS)

- Built a **hybrid cryptographic model** using AES/Fernet (symmetric) and RSA (asymmetric) encryption.
- Files encrypted locally before upload, ensuring **zero-knowledge architecture** and token-based secure sharing.
- Integrated QR-code-based access, expiry tokens, and password protection to prevent replay and theft attacks.

F1 Race Predictor (Python, Scikit-Learn)

- Created ML models using race history data to predict **driver rankings and race outcomes**.
- Applied feature scaling, regression models, and performance visualization for analytics.

Research Publication

Published a paper titled “**PROTEUS ENCRYPTION SYSTEM: Multi-Layer Framework for Enhanced Security Through Dynamic Transformation and Deception-Based Mechanisms**” in *ICECT 2026* (ISBN: 978-93-5737-886-4).

- Developed a multi-layer cybersecurity framework integrating quantum-inspired key establishment, authenticated encryption, dynamic permutation generation, and deception-based honey decoy mechanisms to enhance secure communication resilience against brute-force attacks.

Achievements & Certifications

- Department Project Expo — *Winner* (2025)
- HackIITK (C3ihub) Top 24 teams in CTF Track - IIT KANPUR
- IGKO Zonal 3rd Place (SOF)
- Cambridge English YLE Certified
- Student Council Member (2018–2020), Senthil Public School
- YRC Technical Head — Velammal Engineering College
- NPTEL – *Python for Data Science* (2023)
- Microsoft – *Introduction to Operating Systems* (2023)
- Mastercard – *Cybersecurity Job Simulation* (2024)
- Google – *Cybersecurity Program* (2024)
- Goldman Sachs – *Cybersecurity Job Simulation* (2024)

ZeroNetPay (Founder and Lead Developer)

(Niral Hackathon under review)

- Cross-platform mobile application adding offline payment layer to existing UPI infrastructure—enabling users to send/receive money via QR code scan without internet connectivity
- Cryptographic Architecture: Users link UPI ID once; money loads as HMAC-SHA256 digitally signed tokens stored locally on device. Tokens transfer offline via QR scan + biometric authentication. When internet restored, tokens auto-verify and settle real money to receiver's bank account
- Zero behavior change required—seamless integration with existing UPI ecosystem. Target: Enable digital payments in rural/remote areas and offline scenarios
- Tech Stack: Python (FastAPI backend), Kivy (cross-platform mobile), HMAC-SHA256 cryptography, biometric APIs, QR code generation

Freelance Projects

- Developed full-stack tools for **audio-to-text**, **QR-based medical data storage**, and **AI-enhanced automation**.
- Delivered **client-based prototypes** focused on accessibility, encryption, and digital safety.

Interests

Cybersecurity | Artificial Intelligence | Ethical Hacking | Quantum Encryption | UI/UX Design | Formula 1 | Music

Education

B.E. Computer Science and Engineering(Final Year)

Velammal Engineering College, Chennai

CGPA: 8.45 [2023 – 2027]

Relevant Coursework: DSA, OOP, DBMS, OS, SE, Computer Networks, Web Development

Senthil Public School , Salem

10th Grade: 95.4%

Sri Chaitanya Techno School ,Salem

12th Grade: 80.06%