Shiyamaladevi R S

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EDUCATION

Vellore Institute of Technology   Chennai, India
Bachelor of Technology in Electronics and Communication Engineering; CGPA: 8.52/10   *Apr 2025*
- Ranked 142nd globally for Engineering & Technology (QS 2025) and 16th in India (NIRF 2025)
- Final Semester GPA: 10.0/10 — 163 credits earned
- **Relevant Coursework:** Machine Learning, Digital Signal Processing, Digital System Design, Digital Communication, Information Theory, IoT, Computer Networks.

HONORS & AWARDS

Honorable Mention | *Codédex Game Jam 2025*   Dec 2025
- Built "Sip N Snuggle Cafe", a cozy sim game themed Changing of Time.

Top 50 Teams | *Xylem Global Student Innovation Challenge*   Aug 2025
- Ranked Top 50 globally in 8-week challenge tackling glacier loss and water disasters; $20k prize pool track; Won cash prize.

Best Paper Award | *IEEE ICCCSMD 2024*   Dec 2024
- Presented research paper "Alleviating Muscle Fatigue in Robotic Prosthetic Arms Through Multi-Sensor Fusion and Adaptive Real-Time Grip Assistance" at IEEE - International Conference on Communication, Computing, Smart Materials and Devices 2024 and received the Best Paper Award.

Your Big Year Fellowship | *Global Cohort Selection*   Jul 2024
- Selected for 3-month accelerator with 12 coaching calls; collaborated on UN SDGs with peers from 50+ countries.

PATENTS

A System for Prosthetic Arm with Non-Invasive Sensory Regeneration   Issued Feb 14, 2025
- Application No: 202541009214. Restores sense of temperature and grip force in prosthetic arm users without surgical implants using EMG signals to bridge the gap between human sensation and assistive technology.

PUBLICATIONS & MANUSCRIPTS

Shiyamaladevi R S, Swaroop S Kaimal, Jeetashree Aparajeeta. *Security Auditing and Ultra-Strict Malicious Client Blocking in Federated EEG Seizure Detection.* Presented at **IEEE ICCIDS 2026**. (Acceptance Rate: ~17.8%)

Shiyamaladevi R S. *Swara-Net: A Deep Learning Baseline and Curated Dataset for Five Under-Represented Carnatic Ragas.* Presented at **IEEE INDICON 2025**.

Manimaran, P., Ashwin, J. B., Swaroop, S. K., **Shiyamaladevi R S.** (2024). *Alleviating Muscle Fatigue in Robotic Prosthetic Arms Through Multi-Sensor Fusion...* **IEEE ICCCSMD 2024** DOI:10.1109/ICCCSMD63546.2024.11015135

Shiyamaladevi R S, Jeetashree Aparajeeta. *Automated Classification of E-Commerce Packaging for Open Box Delivery...* TechRxiv. DOI: 10.36227/techrxiv.176281084.44193627/v1

RESEARCH EXPERIENCE

Summer Research Assistant   May 2025 – Aug 2025
Center for Neuroinformatics, Vellore Institute of Technology   *Chennai, India*
- Designed cryptographically-secured federated learning framework using HMAC-SHA256 and AES-256, enabling privacy-preserving model training across 25 simulated medical devices (HIPAA/GDPR-compliant).
- Developed ultra-lightweight CNN (0.54 MB, 140K parameters) optimized for Raspberry Pi, achieving <15 ms inference latency and 98%+ clinical accuracy in real-time seizure detection.
- Implemented Byzantine fault-tolerant aggregation system with dynamic trust scoring, achieving 97.5% accuracy in no-attack scenarios and 95.2% under 30% malicious clients.

Research Intern   Jan 2024 – Apr 2024
Odyssey Labs   *Remote*
- Explored an innovative negative cache approach, gaining insights into optimizing retrieval model efficiency.
- Learned to develop and implement a neural style transfer model using TensorFlow Hub, observing notable improvements in speed and accuracy.

Industry Experience

Supply Chain Machine Learning Intern
Flipkart

Feb 2025 – Jun 2025
Chennai, India

- Engineered Python tool processing 1.3M records across multiple hubs, reducing processing time from 5 hours to 200 seconds (99.8% reduction, 432× efficiency boost), saving significant operational capital.
- Developed and deployed transfer learning-based image classification pipeline for Open Box Delivery quality assurance, achieving 89% overall accuracy and 96% recall for low-quality images using fine-tuned ResNet50.
- Built end-to-end automated workflow integrated with Google Sheets, enabling non-technical operators to run real-time quality checks, reducing manual inspection overhead by 60%.

AWS Project Intern
Ethnus

Aug 2023 – Dec 2023
Remote

- Implemented Amazon EC2 and Elastic Beanstalk to host E-Health Record Management System; utilized S3 for diagnostic image storage with role-based access control.
- Leveraged AWS RDS, Lambda, and CloudWatch for robust, scalable healthcare system architecture.

Instrumentation Intern
Saipem India Projects Pvt Ltd

Sep 2023 – Oct 2023
Chennai, India

- Ensured compliance with engineering specifications through P&ID checks and streamlined data sheet validation.
- Built foundation in oil & gas operations, control systems, and instrumentation using Smart Plant software.

Projects

DreamWeavers - AI Story Teller | *Link*

- Developed an AI-powered web app to generate personalized, illustrated children's stories using GROQ and Mixtral.
- Engineered TTS audio narration, persistent story library, and PDF download for offline access.

Environmental Guardian | *Link*

- Interactive climate action game with a dashboard monitoring real-time data from 110+ global coastal cities.
- Full-stack app using PythonAnywhere (backend) and Render (hosting).

Technical Skills

Languages: Python, SQL, Java, MATLAB, C
ML/AI: TensorFlow, Scikit-learn, CNNs, TimeSeries, Federated Learning, PyTorch, Edge AI, Tiny ML
Cloud & Big Data: AWS (EC2, S3, RDS, Lambda, Elastic Beanstalk, CloudWatch), Google Cloud
IoT: Arduino, ESP32, Raspberry Pi, Sensor Data Processing
Security: AES-256, HMAC-SHA256, Byzantine Fault Tolerance, Privacy-Preserving ML
Tools: Git, Docker, Flask, PowerBI, Tableau, LaTeX

Leadership & Extracurricular

Section Leader
Stanford Code in Place

Apr 2025 – Jun 2025
Remote

- Selected from global pool to lead 6-week Python programming section; facilitated weekly interactive coding sessions and provided personalized feedback to diverse learners.

Fellowship Member
Your Big Year

Jan 2024 – Present
Remote

- Collaborating with global youth leaders on sustainability and social impact initiatives.

School Team Member
VITeach

Sep 2023 – Dec 2024
Chennai, India

- Supported educational outreach by visiting rural schools and developing study materials.