Abhijit Rai

Bachelor of Engineering
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EDUCATION

Army Institute of Technology, Pune
Bachelor of Engineering in Electronics and Telecommunication   *Aug 2023 – Present*
CGPA: 8.59 / 10
Relevant Coursework: Computer Architecture, Computer Networks, Data Structures & Algorithms, DBMS, Embedded Systems, Microprocessors, Operating Systems, Object-Oriented Design

SKILLS

Languages: Python, C, C++, JavaScript, Java
Frameworks & Tools: React.js, FastAPI, Flask, Node.js, Scikit-learn, Git, Docker, Kubernetes, MongoDB, MySQL, Linux, Burp Suite
Cloud, DevOps & Security: AWS, GCP, CI/CD, Containerization, Kubernetes Orchestration, Scapy, Regex, OWASP Testing, Web APIs, Microservices Architecture

EXPERIENCE

Undergraduate Research Assistant – SDR Communication Systems, AIT Pune   *May 2025 – Present*
- Led design and development of an autonomous SDR + analog "fake-chatter" network; lab-validated **92%** message delivery across **8-node** chains, supporting **4 concurrent channels** and **120** call events/hour.
- Engineered the GNU Radio receiver pipeline for auto-pickup, playback & relaying, reducing manual intervention by **60%**.

Frontend & Product Intern – AmplifyX Labs   *Sep 2024 – Apr 2025*
- Architected and developed modular **React.js** components and a custom analytics / A–B testing framework; optimized frontend performance (reduced load time **40%**) and improved engagement **15%** by analyzing **1500+** user sessions.
- Collaborated with product and engineering teams to define requirements, prototype features and accelerate MVP delivery by **30%**; implemented performance and scalability improvements guided by data-driven metrics.

PROJECTS

GLOFzilla – AI-Based Glacial Lake Outburst Flood Early Warning System   **Repository**
Python, TensorFlow, ESP32, BeagleBone, MQTT, Django, React, PostgreSQL, GCP, Model Deployment
- Engineered and deployed a distributed early warning system combining **BeagleBone**-based edge telemetry with cloud-hosted ML inference and alert workflows.
- Trained a **TensorFlow** model (82% precision) on glacial lake sensor and satellite data; served via a **Django-React** dashboard with Twilio alerts.
- Reduced end-to-end warning latency from **20 + minutes to less than 4 minutes** by optimizing data ingestion, model inference, and notification latency.

ML-Based Web Application Firewall (WAF)   **Repository**
Python, FastAPI, Scikit-learn, NLP, Regex, Burp Suite, Scapy
- Built a machine learning-based firewall to detect **OWASP Top 10** threats with **92%+ accuracy**, leveraging NLP on **1K+ HTTP payloads** (real + synthetic).
- Designed a low-latency **FastAPI** microservice for runtime request classification; integrated with a **Scapy**-based traffic interceptor for inline filtering.
- Conducted red-team validation using **Burp Suite** and custom payloads, achieving high precision and low false-positive rates in testbed deployments.

ACHIEVEMENTS

- **Finalist & Team Leader** – Smart India Hackathon 2024 for **GLOFzilla** (Ministry of Defence – DRDO), selected among **1,300 finalist teams nationwide** from **86,000+ teams**.
- **Top 10 out of 420+ participants** – Kickstarter Competitive Programming Competition, AIT Pune
- **3rd Place** – Graphica Frontend Development Competition
- Published **4+ NPM packages** with **100+ downloads**, focused on developer tooling and smart contract automation

LEADERSHIP AND VOLUNTEER EXPERIENCE

- **Embedded Systems Lead – CEAR Robotics Club, AIT Pune:** Established embedded systems at AIT; designed and implemented STM32-based control stacks for autonomous drones and ground robots.
- **Technical Domain Head – OSS Club & E-Cell, AIT Pune**: Managed dev-ops for **Innerve Hackathon** (4K+ participants); led branding and outreach for flagship event **Startup Saga**.