

Seamoon Pandey

AI & Backend Engineer

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SUMMARY

AI & Backend Engineer who builds production-grade systems end to end, from fine-tuned transformer models to the distributed services that serve them. Architected an AI-assisted security scanner pairing a DistilBERT classifier with a NestJS microservice backend on a 59k-sample dataset, with strengths across Python ML pipelines, TypeScript/Node backends, and real-time full-stack delivery.

TECHNICAL SKILLS

- **Languages:** Python, TypeScript, JavaScript, Ruby, C/C++, Dart
- **AI / ML:** PyTorch, Transformers (DistilBERT), XGBoost, YOLOv8, ONNX/TorchScript, feature engineering, model evaluation
- **Backend:** NestJS, FastAPI, Express.js, Flask, Ruby on Rails, REST, WebSocket/Socket.IO
- **Data & Infra:** PostgreSQL, Redis, BullMQ, Docker, Docker Compose, microservices, async job queues
- **Frontend:** React, Next.js, Flutter
- **Security:** XSS detection, context-aware payload generation, fuzzing, WAF analysis, headless-browser verification (Playwright)
- **Practices:** system architecture, MVC, auth (JWT/API keys), e2e/unit testing, Git, Linux

FLAGSHIP PROJECT

RedSentinel: AI-Assisted XSS Vulnerability Scanner

Capstone, Team of 3 | [Code](#) | [Report](#) | [Demo](#)

Lead architect; owned the NestJS orchestration core and the end-to-end ML pipeline. Teammates built the fuzzer and obfuscation engines.

- Architected a polyglot microservice system: a **TypeScript/NestJS** core orchestrating three **Python/FastAPI** AI services over a **Redis/BullMQ** job queue, with **PostgreSQL** persistence and a real-time **Next.js** dashboard (Socket.IO).
- Scored **F1 1.000** (TP 44, FP 0, FN 0) on a **47-endpoint** evaluation under browser-execution strict counting — a finding counts only if the payload executes in a headless browser — with cross-tool runs against ZAP, XSSStrike and Dalfox published alongside.
- Fine-tuned a **DistilBERT** multi-task classifier to label a reflection's context and severity, trained on a **59,122-entry** curated XSS dataset with a custom tokenizer and ONNX/TorchScript export. Diagnosed **78% train/test payload leakage** that had inflated accuracy to 99.5%, regenerated clean splits, and re-baselined at **78.4%**.
- Co-developed an **XGBoost** payload ranker (35 engineered features) to prioritize payloads by predicted effectiveness, with a heuristic fallback when the trained artifact is unavailable.
- Designed the NestJS core: scan lifecycle, crawler, BullMQ queue processor, audit logging, JWT/API-key auth, WebSocket streaming, and HTML/JSON/PDF report generation, backed by unit and e2e test suites.

SELECTED PROJECTS

AI Artifact Recognition Platform

PEC Hackathon | **YOLOv8**, Flask, React

- Built a Flask backend and React dashboard for real-time, YOLOv8-based object recognition with asynchronous inference and structured monitoring endpoints.

Community Connect

OSM Hackathon | Express.js, Flutter

- Developed a full-stack event-coordination platform with REST APIs for real-time GPS-based attendance validation and event tracking.

Garva Diary

BMC InnovateX | Ruby on Rails

- Engineered backend APIs on a Rails MVC architecture with structured validation workflows and mobile integration.

EXPERIENCE

Freelance Full-Stack Developer

Contract, Remote

- Delivered production full-stack platforms on an **Express.js + React** stack, handling authentication, REST APIs, and third-party integrations:
 - **Jyotisam:** astrology consultation and booking platform (jyotisam.com).
 - **Mahadaan:** donation and charity platform with secure data handling (mahadaan.com).

Mentor, Call for Enthusiasts Program (i-CES)

- Mentored students on building scalable applications with clean backend architecture and development practices.

EDUCATION

Institute of Engineering, Tribhuvan University

2022 to 2026

Bachelor's in Computer Engineering, Pashchimanchal Campus, Pokhara