BALVINDER SINGH

Software Engineering Intern – Backend Systems & Applied AI

6-month internship from May 2027 | MSc AI, CentraleSupélec (graduating Dec. 2027)

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Profile

MSc Artificial Intelligence student at CentraleSupélec with 1.5+ years at OYO, building backend services and internal tools for hotels in Europe, UK, USA and the UAE. Experienced in managing scalable distributed backend systems and co-author of two IEEE papers applying LLMs, retrieval-augmented generation (RAG) and machine learning to healthcare and cybersecurity. Looking for a 5–6 month internship from May 2027 to build reliable, scalable software and AI-powered features.

Experience

OYO (Oravel Stays) Gurugram, India

Associate Software Development Engineer Aug. 2025 – Sep. 2026

- Built an end-to-end digital check-in system that replaces front-desk check-in with a self-service guest flow; projected operational savings of over $1M per year.
- Developed in-house dashboards for the Motel 6 management system, reducing operational costs and improving reliability; team *Building Block Award* for supporting the Motel 6 (USA) acquisition, and handling critical on-call issues.

Software Engineering Intern Jan. 2025 – Jul. 2025

- Led projects to streamline hotel onboarding and financial contracting on the OYO 360 platform for 1,000+ hotels across Europe (Belvilla, DanCenter, CheckMyGuest); improved operational efficiency by 30%.
- Owned month-end closure and year-end audit processes for merchant payouts across several countries, ensuring accurate settlement and reconciliation.

Mahindra Logistics (Mahindra Group) | Information Technology Intern Mumbai, India | Feb. 2024 – Apr. 2024

- Cut API response time from 50+ s to ∼500 ms (100× faster) on the LogiPulse KPI-monitoring system by adding Redis caching, optimising SQL queries and redesigning APIs.
- Redesigned the operator interface, reducing task time by ∼80%; 1st place among 200+ teams at the National Catapult Techathon for KPI-monitoring workflows used across 1,000+ warehouses.

Projects & Publications

AgentAudit – auditable LLM agent for financial queries | Java, Spring AI, pSQL, OpenTelemetry | Oct. 2026

- Built a Spring AI agent over a locally hosted LLM that answers portfolio-risk questions by invoking Java tools; each run is persisted to PostgreSQL as a session plus an ordered event log of tool calls, arguments and results, written as execution proceeds so failed runs still leave evidence.
- Correlated every audit event with its OpenTelemetry trace and span, separating sampled, expiring telemetry from the durable record.

Pulse – distributed, rate-limited API service | Go, Redis, Docker, Prometheus, k6 | Oct. 2026

- Built a horizontally scaled Go service: custom round-robin load balancer with health checks, three stateless API replicas, a distributed rate limiter (atomic Redis Lua script, verified with the race detector) and a cache-aside layer; Prometheus metrics and Docker Compose.

LLM-based clinical decision support | Google AI for Impact Finalist | IEEE ICDLT (paper presented) Nov. 2025

- Built a hybrid RAG pipeline (AWS Textract OCR → BioBERT embeddings in Pinecone → Gemini 1.5) for differential-diagnosis support, with dual-persona prompting and rolling summarisation to fit long patient histories in context.

Botnet attack detection for IoT devices | IEEE TENSYMP (paper presented) Sep. 2024

- Stacking ensemble with time-window feature engineering on N-BaIoT to classify Mirai and BASHLITE attacks on low-resource devices; 99.98% binary accuracy.

Education

MSc in Artificial Intelligence (M2, 60 ECTS) | CentraleSupélec – Université Paris-Saclay Sep. 2026 – Dec. 2027

Big data for AI, multi-agent systems, deep learning, trustworthy and explainable AI.

B.Tech in Computer Science & Engineering (AI) | Netaji Subhas University of Technology Dec. 2021 – Dec. 2025

CGPA 7.58/10. Coursework: Distributed Computing, Operating Systems, Database Management Systems, Data Structures & Algorithms.

Skills

Languages:	Java, Python, C++, SQL, Go, JavaScript
Backend & data:	REST APIs, Microservices, Spring Boot, ActiveMQ, Redis, PostgreSQL, MySQL, MongoDB
Infra & observability:	Docker, Kubernetes, AWS, Prometheus, Git
AI / ML:	Machine learning, Deep Learning, NLP, LLMs, RAG, Pinecone; AI Coding Assistants
Other:	English C1 (IELTS 8.0), Hindi native, German A1 | LeetCode 1600+ | Top 10, Google APAC AI for Impact Hackathon