Sudip Khatri

AI & Automation Specialist | Junior AI Engineer

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Professional Summary

AI engineering intern and BSc CSIT graduate (2026) who builds LLM-powered applications, RAG pipelines and Python automation. At Fusemachines, contributed to an AI course-generation system spanning LangGraph workflows, FastAPI services, document ingestion, hybrid retrieval (pgvector, RRF, cross-encoder reranking) and LMS integration. Experienced in connecting LLM APIs to real application workflows, validating and repairing model output, and debugging quality and reliability issues with evidence. Based in Pokhara; seeking a junior AI & automation role.

Core Skills

AI & LLM Engineering: LLM API integration (Gemini, OpenAI-compatible APIs), LangGraph, agent workflows, human-in-the-loop review, prompt engineering, structured generation, RAG, embeddings (Nomic), hybrid retrieval, RRF, cross-encoder reranking (bge-reranker-v2-m3)

Automation & Backend: Python, FastAPI, REST APIs, asynchronous job workflows, document processing (Docling, OCR, table extraction), token-aware chunking, NestJS integration

Data & Infrastructure: PostgreSQL, pgvector, PostgreSQL full-text search, ChromaDB, SQL, SQLAlchemy, Alembic, Redis, Docker, Git, Linux

Frontend & Quality: JavaScript, React/TipTap integration, Pydantic, pytest, regression and golden-file testing, debugging, provider rate-limit handling

Experience

Fusemachines Nepal Aug 2026 – Nov 2026
AI Engineering Intern *Kathmandu, Nepal*

- Contributed to an **AI-powered course-generation system** (Python, FastAPI, LangGraph, LLM integrations): multi-stage lesson generation from reviewable outlines, prompt engineering, Pydantic-validated structured output (15-block schema) with automatic repair, and content transformation pipelines.
- Contributed to backend authoring APIs and **asynchronous generation workflows**, integrating the system with the LMS backend (NestJS proxy) and delivering structured, TipTap-compatible content to the editor.
- Developed **document ingestion** with Docling (parsing, OCR, layout and table extraction), followed by token-aware chunking and metadata enrichment for educational content.
- Built **embedding-based semantic retrieval** with Nomic embeddings and ChromaDB (indexing and retrieving relevant chunks), then contributed to moving the retrieval architecture to **PostgreSQL/pgvector**: dense vector search alongside sparse PostgreSQL full-text search.
- Implemented **hybrid retrieval** with Reciprocal Rank Fusion and optional cross-encoder reranking (`BAAI/bge-reranker-v2-m3`); traced retrieval failures to the chunking stage. (Retrieval layer is separate from the active LMS authoring path.)
- Integrated **web research** (cached search results, source attribution) for grounded content generation.
- **Investigated generation-quality regressions** by isolating prompt, model, chunking and context changes; contributed regression and golden-file tests (480+ test suite), debugging fixes, and provider rate-limit handling with Redis.

Sanima Bank Jun 2026 – Jul 2026
Core IT Intern (6 weeks) *Kathmandu, Nepal*

- **Automated cover-letter drafting:** built a Python tool that extracts content from an uploaded CV (PDF) and, with a pasted job description, uses the Gemini API to generate a tailored draft.
- Learned core IT operations and networking fundamentals with guidance from senior team members.

Academic Project

ASL Alphabet Recognition | *BSc CSIT Final-Year Project | Python, TensorFlow/Keras, MediaPipe, OpenCV*

- Built a real-time sign-language alphabet recognizer (MediaPipe hand landmarks, dense neural network, 26 classes); 94% validation accuracy on a held-out set.

Education

Trinity International College, Tribhuvan University 2022 – 2026
B.Sc. in Computer Science and Information Technology (CSIT) | Percentage: 74.5% *Nepal*

Relevant coursework: Artificial Intelligence, Data Structures & Algorithms, Databases, Software Engineering, Networks

Khwopa Higher Secondary School, Bhaktapur 2019 – 2021
Higher Secondary Education, Science | GPA: 2.87/4.00 (B+) *Nepal*