ZENITH RAI

Software Developer | Backend | GenAI

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SUMMARY

Developer with project-based experience building applications across machine learning, deep learning, generative AI, and backend engineering. Experienced with FastAPI, PostgreSQL, Docker, and REST API development, with hands-on experience building RAG systems and ML inference applications. Seeking an internship or junior software engineering role where I can contribute to real-world projects and continue developing strong backend and AI engineering skills.

EXPERIENCE

AI / Machine Learning Intern *Sep 2026 – Dec 2026*

- Built supervised machine learning models including multilinear regression, logistic regression, decision trees, XGBoost and hyperparameter tuning on real-world datasets.
- Developed deep learning models using PyTorch and Keras, including ANN and CNN architectures with Adam optimizers, batch normalization, and dropout, achieving 96.2% accuracy on a retinal image classification task.
- Developed a full-stack RAG chatbot using LangChain, ChromaDB, FastAPI, and HTML/JavaScript.
- Containerized projects with Docker, managed PostgreSQL database schemas using Alembic, and implemented JWT and bcrypt authentication across backend applications.

PROJECTS (ALL ON GITHUB · ALL DEMONSTRABLE)

RAG Chatbot Platform — ZENITH-RAI/rag-chatbot-platform *Live demo available on request*

[FastAPI] [PostgreSQL] [Pydantic v2] [Alembic] [JWT] [bcrypt] [LangChain] [ChromaDB] [Prompt Engineering] [HTML] [Docker]

- **GenAI ·** Built a modular RAG platform with multi-stage document ingestion, dense-vector embeddings, and hybrid search for retrieval across PDFs and technical documentation.
- Containerized the application using Docker Compose with separate API, cache, and vector storage services and optimized the query-to-generation pipeline.

E-Commerce REST API Backend — ZENITH-RAI/ecommerce_backeendprj *Live demo available on request*

[FastAPI] [PostgreSQL] [SQLAlchemy 2.0] [Alembic] [Pydantic v2] [JWT] [bcrypt] [Docker] [PyTest]

- **Backend ·** Developed a modular REST API using FastAPI, Pydantic v2, SQLAlchemy 2.0, and PostgreSQL with JWT authentication, bcrypt password hashing, and role-based access control.
- Managed database schema changes with Alembic and wrote PyTest tests covering 90%+ of API endpoints.

Deep Learning Retinal Disease Detector — ZENITH-RAI/EYEDISEASEPREDICTION *Live demo available on request*

[PyTorch] [Keras] [CNN] [ANN] [Adam] [RMSProp] [Batch Norm] [Dropout] [OpenCV] [Data Augmentation] [FastAPI] [Docker]

- **DL ·** Trained CNN and ANN models on 4,000+ fundus images across four classes with transfer learning, achieving 96.2% test accuracy using preprocessing and data augmentation.
- Developed a FastAPI inference API with OpenCV-based image preprocessing for real-time model inference.

Vehicle Valuation & Marketplace Engine — ZENITH-RAI/final-year-project *Live demo available on request*

[Scikit-learn] [XGBoost] [Gradient Descent] [Multilinear Reg] [PostgreSQL] [FastAPI]

- **ML ·** Developed a vehicle price prediction system using regression Multilineare regression models, achieving an R^2 score of 0.87.
- Built the supporting marketplace API with FastAPI, PostgreSQL, and eSewa payment integration.

Autonomous AI Dental Assistant & Scheduling Engine — ZENITH-RAI/dental_ai_clinic *Live demo available on request*

[FastAPI] [Google Gemini API] [LLM Tool Calling] [PostgreSQL] [SQLAlchemy 2.0] [Alembic] [Pydantic v2] [SlowAPI] [JavaScript]

- **AI & Tools ·** Built an intelligent clinic assistant using Google Gemini with autonomous function calling to query schedule availability and book patient appointments directly into a relational database.
- **Architecture ·** Architected a FastAPI backend with PostgreSQL, Alembic migrations, and SlowAPI rate limiting; shared Pydantic v2 schemas across REST routes and LLM tools for strict data integrity, complemented by a real-time streaming UI.

SKILLS

Backend & APIs: Python, FastAPI, REST APIs, Pydantic v2, SQLAlchemy 2.0, PostgreSQL, Alembic, JWT, bcrypt, Asyncio, OpenAPI / Swagger

Generative AI: RAG, LangChain, ChromaDB, Ollama, Prompt Engineering, AI Chatbots, Hybrid Search.

Machine Learning: Scikit-learn, Supervised Learning, Multilinear Regression, Logistic Regression, Decision Trees, XGBoost, K-Means, DBSCAN, Feature Engineering.

Deep Learning: PyTorch, Keras, ANN, CNN, Adam, Batch Normalization, Dropout, Data Augmentation

Frontend: HTML, CSS, JavaScript.

EDUCATION

BSc. Computer Science & Information Technology (CSIT) *Expected Dec 2026*

Tribhuvan University, Kathmandu

Relevant Coursework: Data Structures & Algorithms, Design & Analysis of Algorithms, Object-Oriented Programming, Database Management Systems, Advanced Database, Data Warehousing & Data Mining, Artificial Intelligence, Web Technology, Software Engineering, Operating Systems, Computer Networks, Cloud Computing, Network Security, and more.