

Gopi Choudhary

Machine Learning & Software Engineer · B.Tech Computer Science and Engineering, NIT Sikkim

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SUMMARY

Computer Science student building machine learning systems end to end: retrieval and question answering, deep learning in PyTorch, and applied ML optimised for the business decision rather than raw accuracy. Every project ships with leak-free evaluation on held-out data, unit tests and CI. Also comfortable with Java, Spring Boot and full-stack development, with 184 LeetCode problems solved. Seeking ML / AI Engineer or Software Engineer roles.

EDUCATION

National Institute of Technology (NIT) Sikkim

2025 - 2029

Bachelor of Technology, Computer Science and Engineering | **CGPA: 8.3/10**

India

PROJECTS

Hybrid Retrieval + Reranking Question Answering (RAG)

github.com/GopiChoudhary19/hybrid-rag-qa

- Built an open-domain QA system over 2,067 Wikipedia passages that returns an answer with its source passage.
- Implemented Okapi BM25 from scratch on a SciPy sparse matrix and fused it with dense bi-encoder retrieval via reciprocal rank fusion, raising Recall@20 from 0.964 to **0.990**.
- Added cross-encoder reranking that lifted Recall@1 from 0.74 to **0.884** (MRR@20 0.923) on 500 SQuAD questions; end-to-end answers reach **78.3 F1**, within 7 F1 of a reader given the correct passage.

Python, PyTorch, Hugging Face Transformers, Sentence-Transformers, SciPy, pytest, GitHub Actions

Cost-Sensitive Credit Risk Scoring

github.com/GopiChoudhary19/credit-risk-scoring

- Built a loan-approval model where approving a defaulter costs 5x a wrongful rejection; compared logistic regression and LightGBM in leak-free scikit-learn pipelines with 5-fold cross-validation.
- Calibrated probabilities and tuned the decision threshold on out-of-fold expected cost, cutting cost per applicant by **35%** (0.835 to 0.545) versus the default 0.5 threshold on a held-out test set (ROC-AUC 0.81).
- Explained predictions with permutation importance; packaged training, batch scoring and unit tests.

Python, scikit-learn, LightGBM, pandas, Matplotlib, pytest

Residual CNN Image Classifier with Grad-CAM

github.com/GopiChoudhary19/fashion-cnn-gradcam

- Designed a 392K-parameter residual CNN from scratch reaching **93.05%** test accuracy (macro-F1 0.930) on Fashion-MNIST, trained with One-Cycle LR, label smoothing and batched tensor augmentation.
- Implemented Grad-CAM to explain predictions and traced the main error (Shirt vs T-shirt, 100 cases) to the model ignoring collars and buttons.

Python, PyTorch, scikit-learn, Matplotlib

Intern Tracker: Opportunity Discovery Platform (Full-Stack)

github.com/GopiChoudhary19/Intern-tracker

- Built a platform for students to discover and track internships and hackathons: Next.js + TypeScript frontend, FastAPI + SQLAlchemy backend on PostgreSQL, Docker Compose setup and CI running a pytest API suite.
- Implemented passwordless email OTP login (hashed, expiring codes and session tokens) with per-user rate limiting, audit logging, security headers and token-protected admin routes.

Mini-GPT from Scratch

github.com/GopiChoudhary19/mini-gpt-from-scratch

- Implemented a decoder-only Transformer in PyTorch: causal multi-head self-attention, positional embeddings, residual pre-norm blocks, AdamW with cosine decay, and top-k autoregressive sampling.

ML Model Serving REST API

github.com/GopiChoudhary19/ml-model-serving-api

- Built a containerised inference service with FastAPI and Pydantic validation, health and metadata endpoints, a pytest suite and Docker / docker-compose deployment.

Stego: Food Pre-Ordering Platform (Backend)

github.com/GopiChoudhary19/Stego

- Built the backend for a restaurant pre-order platform with Spring Boot 3 and Java 17: JWT access and refresh tokens with BCrypt, real-time order updates over WebSocket (STOMP), Stripe payments with signature-verified webhooks, and Flyway

migrations on PostgreSQL validated by integration tests in CI.

PROBLEM SOLVING

Solved **184** LeetCode problems (121 easy, 58 medium, 5 hard) across arrays, dynamic programming, trees, graphs, binary search and sliding window.

leetcode.com/u/zrXli8EVDO

TECHNICAL SKILLS

Languages: Python, Java, C++, SQL, TypeScript, JavaScript

Machine Learning: PyTorch, Hugging Face Transformers, Sentence-Transformers, scikit-learn, LightGBM, XGBoost, NumPy, pandas

ML Methods: Retrieval-Augmented Generation, dense and sparse retrieval, reranking, CNNs, Transformers, cross-validation, probability calibration, model explainability

Engineering: FastAPI, Spring Boot, React, Next.js, PostgreSQL, Docker, Git, GitHub Actions, Linux, data structures and algorithms