Nikhil Goyal

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github.com/ngoyal88 | leetcode.com/u/ngoyal88

Summary

Computer Science student with strong problem-solving and competitive programming skills, experienced in full-stack and AI-driven development. Interested in applied ML research and building scalable, real-world systems.

Education

Thapar Institute of Engineering and Technology, Patiala **2022 - 2026**
Bachelor of Engineering in Computer Science & Engineering *8.1/10 CGPA*

Work Experience

Research Intern **Jan 2025 – May 2025**
TIET, Patiala

- Conducted research on predictive modeling and direction-of-arrival analysis for gunshot audio signals.
- Proposed a hybrid CNN–XGBoost framework that leveraged CNNs for feature extraction and XGBoost for classification, yielding high accuracy with reduced computational cost.
- Optimized the model-training pipeline using Genetic Algorithms (GA) and curated a dataset of 4,500+ gunshot audio samples with MFCC/Mel-spectrogram features, achieving 99.4% (gun type), 90.27% (direction), and 98.46% (distance) accuracy.
- Authored a research paper titled **"AI-Driven Gunshot Detection: Predictive Modeling and Direction of Arrival Analysis"**, submitted to Knowledge-Based Systems (Elsevier, under review).

Projects

IntervueAI | React.js, FastAPI, LangChain, LM Studio, WebRTC, MongoDB, Redis, Docker **Jun 2025 – Oct 2025**

- Built a scalable **real-time mock interview** platform supporting interactive SDE-1 style interviews with low latency.
- Built containerized backend services (FastAPI, Redis, MongoDB, Docker) with session management and user authentication, designed for seamless deployment on AWS.
- Integrated WebRTC and WebSockets for low-latency audio/video streaming and a collaborative coding environment, enabling concurrent interview sessions.

Multimodal Exoskeleton Control (EEG, EMG, EOG) | Python, PyTorch, Deep Learning
Capstone Project **Feb 2025 – Sept 2025**

- Developed a 6-DOF exoskeleton control framework using EEG, EMG, and EOG signals from a GigaDB dataset with 25 subjects for adaptive motion.
- Trained CNN-LSTM and LMDA-Net models with late-fusion for translational and rotational movement classification.
- Designed preprocessing and fusion pipelines, achieving higher accuracy and reliability than unimodal systems.

EduMate (Paper2Digital) | Flask, PHP, DocTR, OpenCV, Google Gemini API, Snowflake
NatWest Hack4aCause 2025 - Finalist **Sept 2025**

- Developed an **AI-powered Moodle plugin** that converts handwritten or printed content into digital, searchable, and explainable material.
- Enabled AI-driven Q&A and grading allowing students to upload papers for instant explanations and teachers to auto-grade handwritten submissions.

Technical Skills

Languages: C++, Python, JavaScript, Go, SQL
Development: FastAPI, Node.js, Express.js, RESTful APIs, Flask, ReactJS, TailwindCSS
Clouds & Databases: MongoDB, Docker, Redis, Firebase, AWS
AI/LLM tools: LangChain, LM Studio, Ollama, Gemini APIs, LangGraph
Machine Learning: TensorFlow, PyTorch, scikit-learn, OpenCV, XGBoost
Developer Tools: Git, GitHub, Postman, VS Code, WebRTC, Snowflake

Achievements

- Solved **600 DSA problems on LeetCode** and ranked in the top 8% globally with a **contest rating of 1759**.
- Competitive Programming: Codeforces - goyalnikhil883 (Rating: 1453, Specialist), CodeChef - ngoyal88 (Rating:1650).
- Achieved **Global Rank 1951** in **Meta Hacker Cup** Round 1 (2025).
- Secured a **Top 100 rank in the Amazon ML Challenge 2025**, a national-level machine learning competition.
- Finalist – Smart India Hackathon 2024; Ranked in top 5% of Adobe GenSolve'24.
- Completed Machine Learning Specialization by Andrew Ng, offered by Stanford University & DeepLearning.AI