

NIKHIL GOYAL

📞 +91 8146964560 ✉️ goyalnikhil883@gmail.com [🌐 LinkedIn](#) [🐙 Github](#) [🔗 Leetcode](#)

Education

Thapar Institute of Engineering and Technology, Patiala

2022 – 2026

Bachelor of Engineering in Computer Science & Engineering

CGPA: 8.00/10

Shri Guru Harkrishan Sr. Sec. Public School, Chandigarh

2020 – 2022

12th Grade - CBSE

Percentage: 81%

Projects

RepoTech | React.js, TailwindCSS, Node.js, MongoDB, Passport.js, Render

[Source Code](#)

- Developed a GitHub-inspired platform allowing users to authenticate via GitHub OAuth and explore repositories.
- Integrated Passport.js for authentication, enabling secure login through GitHub.
- Built a full-stack web application using ReactJS for the front end and Express with MongoDB for the backend, deployed on Render for seamless performance.

MediCode | React.js, TailwindCSS, Chakra-UI, Express.js, MongoDB

[Source Code](#)

- Developed an e-commerce platform for medicine availability verification and store locator.
- Built a responsive front-end with React.js, TailwindCSS, and Chakra-UI for an intuitive user experience.
- Built a secure and scalable back-end with Express.js and MongoDB, enabling real-time inventory updates, prescription uploads, and secure payment processing.

Restaurant Management System | SQL

[Source Code](#)

- Designed a database-driven system for order processing, inventory, and employee management.
- Developed a normalized relational database (2NF & 3NF) with SQL & PL/SQL scripts, stored procedures, and triggers.
- Implemented security controls and generated reports for data-driven decisions.

Research Projects

AI-Driven Gunshot Detection: Predictive Modeling and Direction of Arrival Analysis

- Built an AI system that listens to gunshot sounds and accurately identifies the type of gun, the direction it was fired from, and how far it was, helping improve real-time threat detection and response.
- Developed a hybrid model combining CNN for feature extraction and XGBoost for classification, improving accuracy and computational efficiency.
- Optimized XGBoost hyperparameters using a Genetic Algorithm, achieving **99.4%** accuracy for gun type, **90.27%** for direction, and **98.46%** for distance.
- Processed and analyzed 4,500+ gunshot audio samples, utilizing MFCCs and Mel-spectrogram features for robust feature extraction.

Coursework

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| • Operating System | • Database Management Systems | • Cloud Computing |
| • Object-Oriented Programming | • Software Engineering | • Probability and Statistics |
| • Computer Networks | • Artificial Intelligence | • Machine Learning |

Technical Skills

Languages: Python, C, C++, JavaScript, SQL, MATLAB, R

Libraries & Frameworks: TensorFlow, Keras, PyTorch, scikit-learn, librosa, OpenCV, NumPy, Pandas, XGBoost, LightGBM, Matplotlib, Seaborn

Backend: Node.js, Express.js, Passport.js

Frontend: React, TailwindCSS, HTML, CSS, Bootstrap, Chakra UI

Clouds & Databases: AWS, MongoDB, Docker

Developer Tools: Postman, VS Code, GitHub, Xcode, Figma

Achievements

- Solved 250+ problems on [Leetcode](#) and ranked in the top 32.6% globally with a contest rating of 1545.
- Ranked in the top 5 percentile of Adobe GenSolve.
- Ranked among the top 10 teams out of 200 in the Smart India Hackathon 2024.
- Completed Machine Learning Specialization by Andrew Ng, offered by Stanford University & DeepLearning.AI