

# GAURAV PATNI

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## EDUCATION

Indian Institute of Technology (IIT), Roorkee

Bachelor of Technology (B.Tech.)

2023 – 2027

CGPA: 7.968 / 10.0

New Beersheba Public School

Class XII (CBSE)

Percentage: 92.80%

Class X (CBSE)

Percentage: 97.40%

## TECHNICAL SKILLS

- **Languages:** C++, Python, SQL (MySQL), Bash
- **ML Frameworks:** PyTorch, TensorFlow, Scikit-Learn, NumPy, Pandas, Matplotlib
- **Tools & Technologies:** Git, Docker, Streamlit, Linux, Object-Oriented Programming (OOP)
- **Domain Expertise:** Deep Learning, Natural Language Processing (NLP), Predictive Modeling, Machine Learning

## TECHNICAL PROJECTS

GPT-2 Language Model Implementation | *PyTorch, NLP*

Feb 2025

- **Implemented** a full-scale GPT-2 Transformer from scratch, including **Causal Self-Attention**, **Positional Encoding**, **Layer Normalisation**, and **GELU activation** to replicate OpenAI's architecture.
- Optimized training for a **160M parameter model** using modular OOP design, reducing code redundancy by **30%** and allowing for scalable hyperparameter tuning.
- Integrated a **Byte-Pair Encoding (BPE)** tokenizer and Weight Tying techniques to improve memory efficiency during large-scale text generation.

Credit Card Risk & Default Prediction | *Finance Club, IITR*

June 2025

- **Developed** a high-performance classification models (**XGBoost**, **Random Forest**) to identify high-risk financial profiles.
- Engineered **15+ domain-specific features** and utilized **SMOTE** for handling class imbalance, resulting in a targeted **F2 score of 60.2**.
- Automated the data pipeline to prioritize **Recall (reaching 70%+)**, effectively reducing potential institutional financial leakage by identifying high-risk defaulters.

Real-Time Speech Emotion Recognition | *MARS, IITR*

June 2025

- **Constructed** a Deep CNN model using **MFCC** and **Delta-Delta features**, achieving an **85% validation accuracy** across 7 distinct human emotions.
- Implemented a robust **data augmentation pipeline** (Time-stretching, Pitch-shifting), increasing model generalization on noisy datasets by **15%**.
- **Deployed** an end-to-end interface via **Streamlit**, enabling **sub-200ms inference** for live audio classification.

## AWARDS & ACHIEVEMENTS

- **Competitive Programming:** Active member in online coding judges, [Codeforces](#) and [LeetCode](#), solving over **600+ complex algorithmic problems**.
- **National Finalist:** Selected as one of the **Top 8 teams out of 2,000+** in the 180DC SBSC Case Competition for data-driven strategic consulting.
- **1st Runner-Up:** Outperformed 50+ teams in the **Winter Analytics Competition** by building a churn model with the highest precision-recall balance.
- **Winner:** IIT Roorkee General Championship; designed a **Real-time Sports Chatbot** utilizing LLM APIs for instant campus updates.

## REFERENCES

Prof. K.S. Suresh, Associate Professor, IIT Roorkee

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