Vavadiya Rudra Bhaveshbhai

Roll No: 240041038
B.Tech - 2nd Year, Computer Science and Engineering
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Education

Degree/Certificate	Institute/Board	CGPA/%	Year
B.Tech	IIT Indore	9.73/10 (Current)	2024–Present
Senior Secondary	GSEB	93.2%	2024
Secondary	GSEB	93.8%	2022

Projects

- **QuantPy — Python Library for Option Pricing Models** May 2025 – Aug 2025
  Options Pricing • Computational Finance • Python *GitHub Repo*
  - Implemented pricing for **European, American, and Asian options** using **Black–Scholes**, **Binomial**, **Heston** and **Monte Carlo** models.
  - Developed functions to compute **Greeks** (Delta, Gamma, Vega, Theta, Rho) across pricing models.
  - Built **visual analytics tools** for price + Greek variation vs time/volatility and Monte-Carlo **path simulation** visualizations.
  - Implemented **Implied Volatility** calculators using **numerical root-finding methods** (BS + Binomial).
  - Added **PnL payoff simulators** for classical strategies — Straddle, Strangle, Bull/Bear Spread, Collar — with model-derived premiums.
  - Validated model correctness using **PyTest** and wrote detailed documentation with usage examples.

- **MNIST Digit Classification using Transfer Learning** Sept 2025
  Deep Learning • Computer Vision • PyTorch
  - Built a digit recognition model using **ResNet-18** pretrained on ImageNet, adapted for the **Kaggle Digit Recognizer** dataset (28×28 grayscale).
  - Applied data transformations — grayscale to 3-channel RGB, resizing to 224×224, and **ImageNet normalization**.
  - Trained the final fully connected layer using **cross entropy loss** and **Adam optimizer**, achieving strong validation performance (˜99% accuracy typical for TL on MNIST).
  - Generated **submission.csv** predictions and automated Kaggle-compatible inference pipeline.

- **SMS Spam Classification using BERT** Aug 2025
  Natural Language Processing • HuggingFace Transformers • PyTorch
  - Implemented a binary text classification system for spam detection using **BERT (bert-base-uncased)**.
  - Performed data preprocessing, tokenization, and **fine-tuned BERT** on the UCI SMS Spam dataset using the **Trainer API**.
  - Evaluated using classification metrics and achieved **high accuracy** typical for this benchmark dataset.
  - Built an inference module enabling real-time spam/ham prediction on custom messages.

Technical Skills

- **Languages:** C++, Python, HTML, CSS, JavaScript
- **Libraries/Frameworks:** NumPy, Matplotlib, PyTorch, Pandas, TensorFlow, Transformers, backtesting.py

Achievements

- Ranked in the **top 1%** of the first-year batch (450+ students), qualifying for **Branch Change** based on Academic Excellence.
- JEE Mains Percentile - 99.89% (2024) , JEE Mains Rank – 1958 (2024)
- JEE Advanced Rank - 1733 (2024)
- Competitive Coding Rating(max) – 1416(Codeforces), 1661(LeetCode)