Anirudh

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Academic Qualifications

Year	Degree/Certificate	Institute	CPI/%
2020 - Present	Dual Degree(B.Tech+M.Tech)	Indian Institute of Technology, Kharagpur	8.82/10
2019	CBSE(XII)	Guru Harkishan Public School,Delhi	95%
2017	CBSE(X)	Guru Harkishan Public School,Delhi	10/10

Scholastic Achievement

- Secured **All India Rank among 1.5%** in **JEE Advanced 2020** among the 2.5 Lakh shortlisted candidates.
- Secured a rank of **1005** in Codeforces Round 799, and **1467** in Codeforces Round 802 out of **17k+ participants** in both.
- Secured a rank of **1251** in the Kickstart Round D 2022 out of **8000+ participants** from all over the globe.

Internships and Projects

- **Research Intern** | **National University of Singapore,Singapore** (Dec'22- Feb'23)
  Mentor: Prof. Chaithanya Bandi, Analytics and Operation, NUS.
  - Implemented code in Python to integrate the Open AIs Application program interface (API) and leverage on NLP tasks
  - Shipped in 1081 chemistry papers to extract relationships using crosslingual coreference, hugging face, GPT-3 from long texts
  - Integrated the MATKG, a large-scale multilingual knowledge graph, into relationship extraction pipeline to improve depth
- **Research Intern** | **Qatar University,Qatar** (Apr'23- July'23)
  Mentor: Prof. Maode Ma, Cyber Security, Qatar University
  - Conducted research on security enhancements in the context of Internet of Drones, testing and debugging security mechanisms
  - Explored smartedge, an end to end encrypted framework to secure transmission of multimedia streams among cloud data centres
  - Simulated the protocol in Scyther tool& Network simulator-3 to calculate metrics in terms of data transfer rate & response time
  - Successfully devised and implemented security enhancements, contributing to reduction of encrypted response or latency by 13
- **Movie Recommender System** | **Hackathon Project** (*Dec'22-Jan'23*)
  Developed three types of Movie Recommender Systems, using machine learning algorithms
  - Implemented the IMDB's weighted rating formula, incorporating factors like average ratings and voting distribution for a movie
  - Utilized Count Vectorizer to create the count matrix and applied cosine similarity to calculate the similarity between movies
  - Used the surprise library which uses algorithms like Singular Value Decomposition (SVD) to minimise RMSE (Mean=0.8978)
- **Vehicle Detection Model** | **Self Project** (*Aug'21-Sep'21*)
  A Deep Learning model to detect and count the number of vehicles in a real-time video
  - Located the moving objects by applying frame differencing and finding the pixel difference on every pair of consecutive frames
  - Generated the contours in each frame after applying image thresholding to find the shape and boundary of the moving vehicles
  - Boosted the results by performing image dilation on frames to make sure that any single vehicle is not counted more than once

Competitions

- **Gold Medal** | **Data Analytics** | **Gymkhana Championship** | **IIT Kharagpur** (*Mar'22*)
  To predict future sales of a fan company using time series forecasting - Patel Hall of Residence
  - Performed EDA to look for patterns like seasonality & correlation in provided dataset of 1039 time series with 38 data points
  - Added relevant features to dataset using data preprocessing methods like normalization (min-max scaling)& feature engineering
  - Explored various ML regressor models like Decision Tree, Gradient Boost, Lasso ,Elastic Net and plotted their MAPE scores
  - Formulated Neural Ensemble method to find the best possible sales predictions and achieved the median MAPE score of 0.1

Technical Proficiencies

- **Languages:** C | C++| Python | SQL| Numpy | pandas | Matplotlib | Sklearn
- **Tools:** VS Code | Jupyter | MATLAB | Simulink | CircuitMaker | LTspice | Tina-Ti | Git | GitHub | MySQL
- **Competetive programming:** Algozenith : 350+ Problems | Leetcode: 300+ Problems

Coursework Information

- **IIT Kharagpur:** Probability & Statistics | Programming & Data Structures | Computer Architecture and Operating systems | Digital Electronic Circuits | Analog Electronic Circuits | Control Systems Engineering | Digital Signal Processing | Signals and Systems | Linear Algebra and Optimization Models | Information Retrieval | Deep Learning Foundations and Applications
- **MOOCs:** Algozenith Data Structures and Algorithms | Supervised Machine Learning | Data Cleaning | Feature Engineering