

Deepak Sharma



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Education

Indian Institute of Technology (IIT), Roorkee

2020-2024

Bachelor of Technology in **Mechanical Engineering** with minors in **Computer Science Engineering**;

CGPA: 8.71

Relevant Coursework: Operating Systems, Computer Networks, Database Management Systems, Software Engineering, Data Structures & Algorithms, Machine learning & Data Science, Optimization techniques, Data Mining for Business Intelligence

Experience

American Express

February 2025-Present

Role: Analyst-Data Science, AI Labs & Governance team

- Developed a **Variable Selection framework** of **XGBoost** and **UGBoost** (Amex-owned model) to streamline the model development and validation process across different in-house and vendor models.
- Awarded "**Analyst of the Quarter**" for successfully closing the **memo** on identified discrepancies in the default values of hyperparameters used during hyperparameter tuning of models.
- Tech Stack:** *Bayesian Optimization, Boruta, Gradient Boosting, Varclushi, SHAP, Interpretable AI, Statistical Analysis, Smart Stacking*

IRES 2023 - NYU Tandon School of Engineering, USA and IIT Mandi, India

June 2023-August 2023

Research Project Title: Property Predictions of Additively Manufactured Parts using ML approach [\[Link\]](#)

- Predicted mechanical properties of **3D-printed** parts with **Random Forest** and **XGBoost**, achieving a **minimal error rate** of **2.977%** and an **Adjusted-R²** value of **0.975** significantly enhancing the reliability of production processes.
- Tech Stack:** Matplotlib, Python, Neural Networks, 3D-printing, Support Vector Regressor, Lasso, Random Forest

Projects

Tech-Enhanced AI Interview Learning Platform [\[Link\]](#) | *BERT, Whisper, LLM, LSTM, NLP, Express, Django*

April 2024

- Developed an integrated platform that leverages a **sophisticated language model** that provides **AI-generated** interview questions with **82% accuracy** on different job roles, based on user input, and provides **in-depth feedback** using **speech processing techniques**.
- Implemented a **Grammar error Detection** model using BERT with an **F1 score** of **0.856**, a **Grammar Error Correction** model using BERT and Gramformers with a **BLEU score** of **0.96**, and a topic-wise interview questions generation model using **Llama2**.

Machine Learning-based Fatigue Prediction of the Wing due to Flutter [\[Report\]](#) | *FFT, Neural Network, LSTM* August 2023-May 2024

- Predicted fatigue of NACA-0012 airfoil using a **hybrid reduced-order model** consisting of **ARX** (linear) and **multi-kernel neural network** (non-linear) under aeroelastic conditions, achieving **RMSE** value around **0.05** on all the results.
- Implemented **Fast Fourier Transform** and **SMOTE** algorithms to increase the model's accuracy by **86%**.
- Increased** the computational efficiency by **62.5%** compared to conventional **CFD simulations**.

YouTube Comments Analysis [\[Link\]](#) | *Python, Machine Learning, NLP, Sentiment Analysis, Express*

October 2022-November 2022

- Filtered the **Spam Comments** from YouTube by implementing the **SVD**, **GMM**, **DBSCAN**, and **k-means clustering** algorithms, achieving a **recall score** of **0.9623** and an **F1 score** of **0.934**.
- Performed **sentimental analysis** and evaluated the **non-spam comments** using a **sentiment score** from **-1** to **1** for each comment.

Himalayan Explorers' Club Trek Management App [\[Link\]](#) | *PHP, SQL, CSS*

February 2024-April 2024

- Developed a **web-based platform** that centralized event registrations and user management, increasing **operational efficiency** by **30%** and designed the **user interface**, resulting in a **25%** increase in user engagement.

Modeling of generated data from text documents using GANs and NLP [\[Link\]](#) | *Python, Deep Learning, NLP*

March 2022-May 2022

- Implemented **GANs** using **Tensorflow** to classify **18000** documents into **20** different topics successfully.
- Increased** the **F1 score** from **0.764** to **0.827** compared to the **Latent Dirichlet Allocation** model.

Technical Skills

Languages: Python, C++, MySQL, NoSQL, PostgreSQL, Java

Developer Tools: VS Code, Git and Github, Jupyter, Colab, Tableau, Excel, Google Cloud Platform

Technologies/Frameworks: Pandas, PySpark, Numpy, Matplotlib, Flask, Tensorflow, PyTorch, Plotly, Seaborn, Scikit-Learn

Achievements

- Recipient of the **IITR Heritage Excellence Award (2022 & 2023)** for **excellence** in academics & extracurriculars.
- Global Rank 58** in CodeChef Starters 42 **Division 2** contest and **Global Rank 82** in CodeChef FizzBuzz **Division 3** contest.
- Achieved **AIR 2106** in JEE Mains 2020 among **10 lakh** students and **AIR 5702** in JEE ADVANCED 2020 among **1 lakh** students.
- Achieved **State Rank 7** in the **State Talent Search Examination (STSE) 2017** of the Rajasthan state.