

# Avirup Das

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## EDUCATION

### •RKMVERI, Howrah

MSc in Big Data Analytics

2024-Present

CGPA: 8.09 (Till 1st sem)

### •RKMRC, Narendrapur

BSc in Mathematics(Gold Medalist)

2021-2024

CGPA: 9.10

## ONGOING PROJECT

### •Speech Emotion Recognition

Feb 2025 - Present

Guided by Prof. Soumitra Samanta

- Developing a deep learning-based Speech Emotion Recognition (SER) model using datasets including RAVDESS, SAVEE and CREMA-D.
- Preprocessing speech data using Mel-frequency cepstral coefficients (MFCCs), spectrograms, and data augmentation techniques to enhance model generalization.
- Implementing Multilayer perceptron (MLP), Convolutional Neural Network (CNN) and Recurrent Neural Networks (RNNs)
- Evaluating model performance using accuracy, F1-score, and confusion matrices to ensure robust classification across multiple emotional categories.

### •AirDraw – Touchless Motion Drawing and Recognition System

March 2025 – Present

Guided by Prof. Br Bhaswarachaitanya

- Designing a touchless human-computer interaction system using computer vision and AI to recognize mid-air gestures for drawing digits, equations, and symbols.
- Implementing real-time hand and finger tracking using OpenCV and MediaPipe to map motion trajectories into drawable inputs.
- Training a Convolutional Neural Network (CNN) model to classify hand-drawn digits, shapes, and symbols from custom gesture datasets.
- Integrating expression parsing to solve mathematical equations drawn via gestures in real time.

## COMPLETED PROJECTS

### •Pneumonia Classification Using Chest X-Rays

Guided by Prof. Br Bhaswarachaitanya

Jan 2024 - May 2024

Github

- Evaluated multiple models for pneumonia classification, with Random Forest achieving the highest accuracy (86%) and best overall balance (F1-score: 0.89). Bagging and Voting Classifiers performed comparably (F1-score: 0.86), showcasing ensemble methods' effectiveness. SVM with RBF kernel had the highest precision (93%) but lower recall (42), indicating conservative predictions..

### •General Index Prediction (GPI) Using Regression Techniques

Guided by Prof. Br Bhaswarachaitanya

Aug 2024 - Dec 2024

Github

- Explored and implemented regression techniques including ridge, lasso, elastic net, and polynomial regression. Used multiple optimization methods (gradient descent, normal equation, SVD) to predict the GPI. Employed early stopping to reduce overfitting and improve prediction accuracy. Compared model performance using metrics such as RMSE, MAE, and R-squared.
- After all the technique I conclude ,Polynomial Regression (Degree 4) as the most accurate (MSE : 0.1629) and Ridge Regression as the most efficient(R2 score : 0.999 and MSE : 0.1424) for generalization

## TECHNICAL SKILLS

- **Programming Languages:** Python, R(Basic)
- **Machine Learning Tools and Deep Learning Frameworks:** NumPy, pandas, scikit-learn, Matplotlib, seaborn, PyTorch
- **Big Data Technologies:** Apache Spark
- **Operating Systems:** Windows, Linux

KEY COURSES TAKEN

- **Artificial Intelligence and Machine Learning:** Computer Vision, Deep Learning, Natural Language Processing,Machine Learning
- **Mathematics for Computing:** Linear Algebra, Probability and Statistics, Optimization Techniques,Time Series Analysis ,Survival Analysis

POSITIONS OF RESPONSIBILITY

- Core Organizing Team Member**,INFINITY 2024 (Math Fest at RKMRC) *Feb. 2024*
- Core Committee Member**,Perceptron 2025 Auction Group (Tech Fest at RKMVERI) *Jan. 2025*

ACHIEVEMENTS

- Gold Medal (1st Class 4th Position)**,Graduation, RKMRC *2024*
- Top 5% in NPTEL**,Joy of Computing with Python, NPTEL *2024*