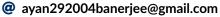
AYAN BANERJEE

M.Sc. in Big Data Analytics

Ramakrishna Mission Vivekananda Educational and Research Institute, Belur Math, West Bengal, India



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AyanBanerjee29

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PROJECTS

• Multi Scale Stock Price Forecasting:

July.'25- Ongoing, RKMVERI

 Implemented Wavelet Transform-based multi-scale decomposition of stock price data to extract both short-term fluctuations and long-term trends for improved forecasting.

Quantitative-Portfolio-Optimization-Engine:

June.'25 - Aug.'25, RKMVERI

- A Python-based engine that implements the Nobel Prize-winning Markowitz Mean-Variance Optimization theory to construct optimal investment portfolios.
- This project fetches real-world stock data, applies modern optimization techniques to determine the ideal asset allocation, and validates the strategy's performance through out-of-sample backtesting.

• Movie Recommendation System: Jan.'25 - Apr.'25, RKMVERI

- Recommending movies based on collaborative filtering using Graph Neural Networks (GNN).
- Implemented and evaluated multiple GNN architectures including GCN, GAT, and LightGCN for user-item interaction modeling.
- Achieved improved recommendation accuracy over traditional Matrix Factorization-based models by leveraging graph structures.

Music Segmentation:

Jan.'25 - Apr.'25, RKMVERI

- Extracted drums, vocals, bass, and others from stereo music tracks using Deep Learning trained on the MUSDB18 dataset.
- Designed and compared classical signal processing methods (Frequency Thresholding, Spectrogram Masking) with a U-Net based Deep Learning model for source separation.

Bengali OCR:

Jan.'25 - Apr.'25, RKMVERI

- Developed an Optical Character Recognition (OCR) system for handwritten Bengali characters.
- Built and evaluated CNN models LeNet-5, ResNet18

Heart Disease Prediction:

Aug.'24 - Nov.'24, RKMVERI

- Predicted the presence of heart disease using classical Machine Learning algorithms on the UCI Heart Disease dataset.
- Performed extensive data preprocessing, feature selection, and model comparison (Logistic Regression, Random Forest, SVM).
- Achieved high accuracy and precision through hyperparameter tuning and cross-validation.

COURSEWORK

- Basic Statistics
- Multivariate Statistics
- Deep Learning & NLP
- Machine Learning
- Finance

- Econometrics
- Time Series & Survival Analysis
- Probability and Stochastic Process
- Data Structures and Algorithms

EDUCATION

 Ramakrishna Mission Vivekananda Educational and Research Institute, Howrah

M.Sc. in Big Data Analytics

(Rank: 1/27) (Sem-1) CGPA: 8.78

2024 - Present

Serampore College

B.Sc.(H) in Mathematics

= 2021 - 2024 CGPA: 9.032

Hooghly Branch Govt School

Class(10+2)

2019 - 2021 Score: 95.8%

• Elite Co-Ed School

Class(10)

2008 - 2019 Score: 92.14%

TECHNICAL SKILLS

- \bullet **Programming Languages:** Python, R , \LaTeX
- Libraries & Frameworks: Pytorch, NumPy Pytorch Geometric, Scikit-learn, Pandas, Matplotlib.
- Operating System:Windows, Linux (Ubuntu)

ACHIEVEMENTS & CERTIFICATIONS

- Topper in B.Sc. Mathematics,2021-24(Serampore College)
- Top 5% in NPTEL, Joy of Computing with Python

HOBBY

- Reading books on self-development.
- Playing Volleyball
- Games