Rudrajit Dey

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Education

- **Ramakrishna Mission Vivekananda Educational and Research Institute**, Belur   **Expected 2026**
  M.Sc in Big Data Analytics

  - 1st Semester SGPA: 7.0/10.0

  - Relevant Coursework: Machine Learning, Data Structures and Algorithms, Probability and Stochastic Processes, Statistics - I, Linear Algebra with Matrix Computations, Hadoop and Distributed Computing

- **Institute of Mathematics and Applications**, Bhubaneswar   **Graduation Date: June, 2024**
  B.Sc (H) in Mathematics and Computing

  - CGPA: 8.23/10.0

  - Relevant Coursework: Calculus, Differential Equations, Complex Analysis, Abstract Algebra, Linear Algebra, Topology, Number Theory, Numerical Analysis, Optimization and LPP, Design and Analysis of Algorithms, Theory of Computation, Differential Geometry, Quantum Mechanics

Projects

- **Deep Learning for Portfolio Optimization**
  GitHub: github.com/portfolio-optimization   January 2025 – May 2025

  - **Overview**: Implemented an LSTM model to optimize a portfolio of ETFs. Used Tensorflow for the neural network and historical data from Yahoo Finance API. Gained knowledge about Markowitz Mean-Variance Portfolio theory and deep-learning architectures like RNN, LSTM, Attention models.

- **Wine Quality Classification**
  GitHub: github.com/wine-quality-classifier   August 2024 - December 2024

  - **Overview**: Implemented various classification algorithms like Logistic Regression, Decision Trees, Random Forest, SVM etc to predict wine quality based on physiochemical properties, leveraging tools like pandas, numpy, matplotlib, scikit-learn as well gained hands-on knowledge about data preprocessing, feature selection, model implementation and performance evaluation.

- **Reading Project: Finite Simple groups**   Guide: Prof. Kishore Kumar Das, IMA, Bhubaneswar
  GitHub: github.com/bsc-project   January 2024 - April 2024

  - **Overview**: Authored a project report on permutation groups and the O'Nan–Scott Theorem, highlighting the classification of finite simple groups and its role in solving problems in finite permutation group theory. Explained various classifications under the theorem and discussed three key applications in group theory.

- **Reading Project: Lie Solvability**   Guide: Prof. Saber Ahmed, Hamilton College, NY, USA
  GitHub: github.com/twoples-project   February 2023 - April 2023

  - **Overview**: As part of Twoples program my aim was to learn about Lie Algebras and Lie Solvability and use it to understand the theorem from a paper "On the Lie-Solvability of the Novikov Algebras" by Tulenbaev, Umirbaev and Zhelyabin, which states that any Novikov algebra over a field of characteristic $\neq 2$ is Lie-solvable iff its commutator ideal [N, N] is right nilpotent.

Skills

- **Programming Languages**: Python, Java

- **Machine Learning**: scikit-learn, PyTorch, TensorFlow, Keras

- **Tools**: NumPy, Pandas, Matplotlib

- **Mathematical Tools**: Probability, Statistics, Optimization