

RONAK SARKAR

M.Sc in Big Data Analytics
RKMVERI, Belur Math, West Bengal, India

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🌐 Portfolio



PROJECTS

- **Congruence Theory and Its Applications**
 - Explored applications of Congruence Theory in Number Theory and Cryptography.
- **Fashion MNIST Classification**
 - Implemented supervised machine learning models to classify fashion items (shirts, shoes, etc.) using the Fashion MNIST dataset.
 - Focused on achieving high accuracy using advanced classification techniques.
- **ChessLens: Chess Board Visualization**
 - Designed and implemented a real-time chessboard digitization tool using OpenCV and Tkinter.
 - Detected square-wise occupancy and piece localization with accuracy of 93.75% using custom preprocessing and contour detection.
 - Enabled live video stream input and chessboard parsing to generate FEN strings and visualize board states.
- **Visual Question Answering (VQA) on VizWiz Dataset**
 - Used CLIP ViT-B/32 to extract joint image-question features for a real-world, accessibility-focused VQA dataset.
 - Trained various MLP architectures with dropout to handle noisy data and long-tail answer distributions.
- **Reinforcement Learning-Based Portfolio Optimization**
 - Developed a portfolio optimization strategy using deterministic reinforcement learning and deep neural networks.
 - Incorporated Graph Attention Networks and spatio-temporal features to model asset relationships and market dynamics.
 - Evaluated model performance using real stock market data and backtested portfolio decisions.

COURSEWORK

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| <ul style="list-style-type: none">• Data Structures and Algorithms• Machine Learning• Statistics-I• Probability and Stochastic Process• Universal Human Values• Java & Hadoop• Linear and Abstract Algebra | <ul style="list-style-type: none">• Advanced Statistical Methods• Time Series & Survival Analysis• Computer Vision• Deep Learning and NLP• Applied Machine Learning• Indian Knowledge System |
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ACHIEVEMENTS

- Secured 1st position in Chess event at TECHetc 2K23, Hooghly Engineering & Technology College (March 2023).
- Secured 1st prize in Intra-College Chess Tournament 2023-24 at Chandernagore College (Jan 2024).
- FIDE Classical Chess Rating: 1447

CERTIFICATIONS

- IT/ITES Vocational Course: Level 1
- Python Project for Beginners – Great Learning Academy (August 2024)

EXPERIENCE

IASc-INSa-NASI Summer Research Fellow

Indian Institute of Technology Bombay

📅 May 2025 – July 2025 📍 Mumbai, India

- Selected under national SRFP programme to work under Prof. K.S. Mallikarjuna Rao.
- Working on Financial Probability.

EDUCATION

- **Ramakrishna Mission Vivekananda Educational and Research Institute, Howrah**

M.Sc in Big Data Analytics

📅 2024 – 2026 (Expected)

- **Chandernagore College, University of Burdwan**

B.Sc in Mathematics

📅 2021 – 2024

- **Pandua Sasibhusan Saha High School**

Higher Secondary (PCM
Computer Science)

📅 2013 – 2021

- **Nivedita Sishu Siksha Kendra**

Elementary School

📅 2009 – 2012

SKILLS

- **Programming:** Python, R
- **Concepts:** Machine Learning, Data Analysis, Data Structures
- **Mathematics:** Abstract and Linear Algebra, Probability and Statistics
- **Tools:** Git/Github, Oracle Database, MySQL Database, MS Office, ELAN Annotation Tool

HOBBY

- Playing Chess