RONAK SARKAR

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

✉ ronaksarkar03@gmail.com 📞 7980465204 in Ronak Sarkar ⚙ iamrsarkar 🌐 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

- Universal Human Values
- Indian Knowledge System
- Basic Statistics
- Probability and Stochastic Process
- Linear and Abstract Algebra
- Advanced Statistical Methods
- Multivariate Analysis
- Data Structures and Algorithms
- Java & Hadoop
- DBMS
- Machine Learning
- Applied Machine Learning
- Time Series & Survival Analysis
- Computer Vision
- Deep Learning and NLP
- Reinforcement Learning

ACHIEVEMENTS

- Selected for the IASc-INSA-NASI Summer Research Fellowship Programme 2025 (SRFP) — among nationally shortlisted candidates.
- 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.
- Worked on Portfolio Optimization.

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, Portfolio Optimization, Data Structures, Time Series Analysis
- **Mathematics:** Abstract and Linear Algebra, Probability and Statistics
- **Tools:** Git/Github, Oracle Database, MySQL Database, MS Office, ELAN Annotation Tool

HOBBY

- Playing Chess