Roudranil Das

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Education

2022 - 2024 (ongoing)
Tamil Nadu India

M.Sc. Data Science
Chennai Mathematical Institute
SGPA (after semester 2): 9.25

2019 - 2022
West Bengal India

B.Sc. Mathematics (Honours)
St. Xavier's College (Autonomous), Kolkata
CGPA: 8.46

Internships

Aug 2023 - ongoing

Machine Learning Intern - Hodu Solutions (as industry project at CMI)
Tools used: Python, pandas, yahoo-finance
− Performed fundamental analysis and intrinsic valuation of companies traded on the US markets
− Analysed historical price and trading data of above companies and derived technical indicators
− Analysed performance of common price-action trading strategies in order to rank the strategies and build an ensemble model

May 2023 - July 2023

Data Science Summer Intern - LTIMindtree
Tools used: Python, pandas, spaCy, BERTopic, FLASK-Restful, Streamlit
− Conducted statistical analysis on raw text data and developed a comprehensive data cleaning pipeline tailored for future applications. Implemented data quality checks based on statistical estimates.
− Utilized topic modeling techniques to extract optimum cluster values and identify topic clusters, providing valuable insights for assessing data quality.
− Incorporated the data quality checking pipelne as a RESTful API service, enabling end-to-end capabilities for efficient data processing and access.

Projects

August 2023 - ongoing

Character level Language Model
Tools used: Python, PyTorch, nltk
− Implementing a character level language model from scratch.
− Goal is to progressively generate text similar to the corpus used for training.

July 2023 - ongoing

Optical Music Recognition - recognition of components of sheet music
Tools used: Python, openCV, matplotlib
− Collected a repository of sheet music pdf and corrersponding embedded metadata.
− Performed segmentation of the staves and staff lines of a printed sheet music pdf file using openCV.

Jan 2023 - Feb 2023
 Link

Comparative Analysis of Decision trees, Naive Bayes and Ensemble models
Tools used: Python, scikit-learn, matplotlib, pandas, optuna
− Analysed performances of the algorithms in both classification and regression tasks.
− Performed feature engineering to improve predictive metrics (accuracy and recall) by 3-4 percentage points.
− Carried out hyperparameter tuning for both models and cost complexity pruning for decision tree to improve predictive metrics and generalisability further.

Dec 2022
⚫ Link

Audio Classification with CNN-LSTM networks
Tools used: Python, PyTorch, torchaudio, pandas
− Analysed audio samples of the words "zero" to "nine"
− Trained a baseline CNN, a CRNN and a parallel CNN-RNN model with the CNN-RNN model achieving 84% accuracy on test set (+15% over CRNN) and F1-score of 84%.

Oct 2022 -
Dec 2022
⚫ Link

Deforestation and Forest Conversion
Tools used: R, ggplot, tidyverse, R-Shiny | Chennai Mathematical Institute
− Created visualisations to better understand causes for deforestation. [Report]
− Built a dashboard web app with R Shiny for the above. [Dashboard]

Aug 2022 -
Apr 2023
⚫ Link

Financial Literacy among 18-35 Year Olds
Tools used: Python, NumPy, pandas, Statsmodels, Matplotlib
− Collected responses to questions measuring financial literacy and scored them.
− Performed exploratory statistical analysis to determine factors of financial literacy

TECHNICAL SKILLS

Languages	Python, MySQL, R, C, LaTeX
ML/AI	NumPy, Pandas, Matplotlib, Scikit-Learn, ggplot2, PyTorch, BERTopic, spaCy, NLTK
Misc	Minitab, Flask, Streamlit, Linux

KEY COURSES TAKEN

Postgraduate
Machine Learning and ML theory, Deep Learning and Advanced ML*, Statistics and Visualisation with R, Regression techniques*, NLP*, RDBMS and SQL, Python and Data Structures, Design and Analysis of algorithms
* indicates ongoing courses

Undergraduate
Linear algebra, Real analysis, Multivariable Calculus, Differential equations, Mathematical Statistics, R, C

AWARDS AND ACHIEVEMENTS

2023	**Reliance Foundation Postgraduate Scholarship Awardee**
2019	**INSPIRE Scholarship for Higher Education, Dept. of Science and Technology, Government of India**
2019	**Jagadish Bose National Science Talent Search Senior Scholarship Awardee**
2017	**Jagadish Bose National Science Talent Search Junior Scholarship Awardee**

POSITIONS OF RESPONSIBILITY

CMI *2023*	**Teaching Assistant - Mathematical methods and Analysis** Serving as a teaching assistant for the above course offered to MSc First year students.
CMI *2022*	**Placement Representative** Serving as a representative on the CMI Placement Committee.

EXTRACURRICULAR

2017 onwards
Music
Have been playing the mandolin since 2017.