SAIKAT MONDAL

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Education

M.Tech in Computational and Data Science **2022 – 2024**
Indian Institute of Science, Bangalore *CGPA: 8.60/10*

M.Sc in Mathematics **2020 – 2022**
Ramakrishna Mission Vivekananda Educational and Research Institute, Belur Math, West Bengal *CGPA: 7.83/10*

B.Sc in Mathematics **2016 – 2020**
St. Pauls' C M College (Calcutta University), Kolkata, West Bengal *Percentage: 75.20*

Relevant Coursework

- Machine Learning
- DL for Computer Vision
- Deep Learning
- DL for NLP
- Probability & Statistics
- Linear Algebra & Optimization

Internship

Machine Learning Co-Op, AMD **June 2023 – Nov 2023**

- Working on time-series analysis of IR-drop of semiconductor chips from physical design flow using *ensemble models* and *LSTM*.
- Making a simulation-based stochastic differential model, *Reaction-Diffusion* Modelling from scratch using *spectral clustering* and compare the results with *ensemble models* and *LSTM*.

Project

Enhancing Stock Market Predictions with Sentiment Analysis & Generative AI(GANs) **Aug 2023**

- Text preprocessing via *NLTK*, *TF-IDF* word embedding, and sentiment prediction with *Decision Tree* and *Random Forest* for company stock sentiment analysis.
- Integrating Tesla stock sentiment with *Generative Adversarial Network(GAN)*-driven forecasting synthesizes future close prices, elevating market analysis.

Duplicate Question Detection using LSTM Siamese Network on Quora **June 2023**

- Conducted thorough EDA and performed text pre-processing on the dataset.
- Employed three distinct word embedding techniques: *Word2Vec*, pre-trained *GloVe* & pre-trained *BERT* (transformer-based embedding).
- Trained *LSTM Siamese Network* on these word embedding & concluded that *BERT* outperforms the rest of the word embedding for our dataset.

Using YOLOv5 Algorithm to Detect and Recognize American Sign Language **Aug 2023**

- Applied transfer learning to fine-tune a pre-trained *YOLOv5s* model for a custom American Sign Language dataset encompassing six classes. This effort resulted in precise object detection and localization, with an impressive *mAP50* of 0.995 and *mAP50-95* of 0.765 during validation.

Credit Card Fraud Detection **Dec 2022**

- Conducted EDA and performed class balancing using *Undersampling*, *Synthetic Minority Oversampling Technique(SMOTE)*, and *Adaptative Synthetic(ADASYN)* methods.
- Evaluated the predictive performance using *Logistic Regression*, *Random Forest*, and *XGBoost* for classifying credit card transactions into fraudulent or legitimate categories.

Assignments

- Image compression using *Singular Value Decomposition*.
- Implementation of *Feed Forward Neural Networks* and *Backpropagation* From Scratch.
- *PCA* From Scratch using *matrix decomposition*

Technical Skills

- **Programming Languages**: Python, SQL, C++, LaTeX
- **Tools**: NumPy, Pandas, Matplotlib, Plotly, Seaborn, Sci-kit Learn, Keras, TensorFlow, PyTorch, OpenCV, NLTK, Excel, PowerBI
- **Technical**: Optimization, Machine Learning, Deep Learning, Natural Language Processing, Prompt Engineering

Academic Accomplishments

- Participated in Hackathon by Bright India, 2023
- Secured AIR 120 in GATE 2022.
- Qualified for Lectureship in CSIR-NET 2022.
- Awarded Swami Vivekananda MCM scholarship during Undergraduate and Post-graduate study.