

SAYAN DUTTA

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Education

M.Tech. in Computational and Data Science

Indian Institute of Science, Bangalore

2022 – 2024

CGPA: 9.50/10

M.Phil. in Mathematics

Indian Institute of Technology, Bombay

2018 – 2022

CGPA: 9.40/10

M.Sc. in Mathematics

Indian Institute of Technology, Bombay

2016 – 2018

CGPA: 9.31/10

B.Sc. in Mathematics

Jadavpur University, Kolkata

2013 – 2016

Percentage: 75.84

Relevant Coursework

(*Ongoing Courses)

- Machine Learning
- Linear Algebra
- Deep Learning
- Numerical Optimization
- Computer Vision
- Natural Language Processing*

Work Experience

Interim Engineering Intern, Qualcomm

May 2023 – Aug 2023

XR Research Labs, Bangalore

- Worked on Photometric Calibration of XR Headset devices and proposed an improvement over the existing pipeline using EMoR parametrization.
- Provided an end-to-end framework for the data capture process and final optimization step for the new calibration.

Projects

Dance Step Generation using Diffusion Models

Jun 2023

- Successfully implemented a Denoising Diffusion Probabilistic Model from **SinMDM** and utilized **P-UNet** architecture to generate fresh dance movements from a single initial sequence.

Generating Titles using Text-To-Text Transfer Transformer

Apr 2023

- Implemented Text-To-Text Transfer Transformer (**T5**) to automate title generation of a research paper from its abstract, and finetuned the model's performance on **ROGUE** score.

Physics-based GNNs for Accelerated Material Property Prediction

Mar 2023

- Implemented and performed a comparative study of **Graph-NN** architectures **CGCNN**, **MEGNet** for predicting the stability and crystal properties of supercell and defect molecular structures.

Detection of Equivalent Quora Questions

Feb 2023

- Utilized **Word2Vec**, **GLoVe** and **BERT** word embeddings to train an **LSTM Siamese Network** and observed the superiority of BERT compared to its counterparts.

Credit Card Fraud Detection

Dec 2022

- Mitigated class imbalance using methods like **Undersampling** and **SMOTE**, and fine-tuned hyperparameters to assess and compare the effectiveness of **Logistic Regression**, **SVM**, **Random Forest**, **CatBoost**, and **XGBoost** algorithms.

M.Phil. Thesis (Topic : Nevanlinna-Pick Interpolation Problem)

Jul 2022

- Explored the Classical, Normed and Spectral versions of the interpolation using tools from Multivariable Calculus, Operator Theory, Complex Analysis and studied possible extensions to higher dimensional spaces.

Technical Skills

Programming Languages: Python, C++, LaTeX

Tools: PyTorch, Keras, Numpy, Pandas, Sci-kit Learn, PyMC3, Matplotlib

Technical: Machine Learning, Optimization, Deep Learning

Academic Achievements

- Part of winning team in Qualcomm's IdeaQuest 2023 - an idea pitching contest on the use of AI/ML in smart city.
- Secured Class Rank 2 in the first year of M.Tech. at IISc Bangalore.
- Received Dr. P.V. Sukhatme Memorial Award for securing Class Rank 2 in M.Sc. Mathematics.
- Secured AIR 2 in GATE Mathematics and AIR 30 in GATE Statistics.