

# SUBHASIS BISWAS

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## EDUCATION

### M.Tech in Computational and Data Science

Indian Institute of Science, Bangalore

2023 – 2025

CGPA: 8.7/10

### M.Sc. in (Pure) Mathematics

Ramakrishna Mission Vivekananda Educational and Research Institute, West Bengal

2020 – 2022

CGPA: 8.4/10

### B.Sc. in Mathematics

Durgapur Government College, West Bengal

2017 – 2020

CGPA: 8.5/10

## INTERNSHIP EXPERIENCE

### Fidelity Internship: Imposing Guardrails on LLMs

May-July 2024

- Worked on filtering and safeguarding client facing GenAI applications against malicious usage, competitor mentions, and sensitive information and hallucinations, enhancing LLM reliability.
- Built a **Guardrail Framework** using **BERT**, **Mistral Instruct** and deployed using **FastAPI** along with a **RAG** based FAQ bot with a **Streamlit** interface.

## PROJECTS

### M.Tech Thesis with DRDO: Low Earth Satellite Orbit Prediction

August 2024-

- Implemented **Non-Linear Weighted Least Squares** for initial state estimation from noisy observations
- Planned Exploration: **Physics Informed GAN** for noise characterisation due to process noise

### Predicting Building Energy Rating from Energy Consumption Data

August 2024

- Conducted thorough **EDA** and data cleaning
- Performed **Feature Engineering** and **Feature Selection** to improve model performance.
- Predicted **Energy Rating** of buildings using **Linear Regression**, **SVM** and **Random Forest** algorithms.

### Image Classification Using Vision Transformer

July 2024

- Fine-tuned **Google ViT** using **HuggingFace** and **PyTorch** for Building Type Classification
- Mitigated High Class Imbalance using **Image Similarity Score** based Training Sample Selection

### Movie Recommendation System

July 2024

- Built a **Collaborative Filtering** based movie recommendation system using python and **surprise**.
- Implemented **k-NN** and **Matrix Factorization** algorithms for **User-Item** recommendations.

### Character-Level GPT

May 2024

- Implemented a **Character-Level GPT** model using **PyTorch** on **Tiny-Shakespeare** dataset.

### Adaptive CNN Gesture Recognition System

Jan 2024

- Designed a **Gesture Recognition System** using **Python**, **OpenCV**, **Keras**, and **TensorFlow** with a **CNN** model.
- Developed an **interactive console interface** for real-time **Gesture Capture** via webcam.

## TECHNICAL SKILLS

**Programming Language(s):** Python , C++, R

**Tools:** Numpy, Pandas, Matplotlib, PyTorch, TensorFlow, Keras, SkLearn, OpenCV, PIL, L<sup>A</sup>T<sub>E</sub>X, MS Office, BeautifulSoup

**Specialization:** Machine Learning, NLP, Image Processing, Deep Learning, Statistical Inference

**Additional Familiarities:** Linux (Ubuntu), AWS, Mathematica, Git, Python Scripting for Automation

## COURSEWORK

- |                                 |                            |                          |
|---------------------------------|----------------------------|--------------------------|
| • Numerical Linear Algebra (A+) | • Stochastic Modelling (A) | • Numerical Methods (A+) |
| • Introduction to NLP           | • Machine Learning         | • Deep Learning for CV   |

## RELEVANT ASSIGNMENTS AND CLASSWORKS

- Image Compression using **Singular Value Decomposition**
- **Root Finding**, **Polynomial Interpolations**, **Solution to Initial Value Problems in Differential Equations**
- **Linear** and **Logistic Regression** from scratch
- Coding a **FeedForward Neural Network** for **MNIST** dataset from scratch

## ACADEMIC ACCOMPLISHMENTS

- Secured AIR 2 in GATE MA 2023