SUPRIYA DUTTA

M.Sc. in Big Data Analytics
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PROJECTS

- **Automated Code Documentation with Multi-Agent Systems**
  Python | Scikit-learn | *Aug'25 – Present*
  - Developed a custom multi-agent LLM system (Reader, Searcher, Writer, Verifier, Orchestrator) with dependency-aware processing to automatically generate comprehensive, accurate code documentation, outperforming baseline methods.

- **Multi-Agent LLMs for Code Extraction from Research Papers**
  Python | Scikit-learn | Ollama | [View Code]   *July'25 – Present*
  - Implemented a multi-agent system using LLaMA 3 (via Ollama) to automatically convert research papers into Python code by designing custom Planner, Analyzer, and Coder agents.

- **Automatic Dialect Recognition from Bengali Speech**
  PyTorch | Scikit-learn | [View Code]   *May'25 – Present*
  - Created a Bengali dialect recognition dataset from consent-based phone call recordings, isolated speaker audio, grouped identical responses, extracted features (MFCC, FBANK, wav2vec2), and applied K-means clustering, where wav2vec2 showed the best dialect separation.

- **Conditional Image Synthesis Using Gaussian-GAN**
  TensorFlow | Keras | Scikit-learn| [View Code]   *April'25 – June'25*
  - Implemented GauGAN from scratch with SPADE normalization and a variational encoder, trained on Facades and Pascal VOC datasets, using multi-loss optimization (GAN, KL, VGG, feature matching).

- **Automated Bird Species Detection**
  PyTorch | Scikit-learn | OpenCV| [View Code]   *Mar'24 – May'25*
  - Benchmarked ResNet, EfficientNet, ViT, and Swin Transformer for bird classification on CUB-200-2011 datasets, where Swin Transformer performing best.

- **Imbalance-Resilient Email Spam Classification Using Machine Learning**
  Python | Scikit-learn |Streamlit | [View Code]   *Dec'24 – Mar'25*
  - Addressed dataset imbalance with oversampling, class-weighting, and advanced text augmentation (BERT fill-mask, LLaMA paraphrasing, back-translation); improved robustness using Voting and Stacking ensembles.

- **Music Popularity Prediction using Spotify Track Features**
  Python | Numpy | Pandas | Scikit-learn | [View Code]   *Aug'24 – Nov'24*
  - Developed a two-stage hybrid classification–regression model using Spotify track features: classifiers for zero vs. non-zero popularity, followed by regressors for non-zero cases.

COURSEWORK

- Deep Learning & Natural Language Processing
- Computer Vision
- Artificial Intelligence
- Time Series Analysis
- Machine Learning
- Statistics
- Econometrics & Finance
- Reinforcement Learning
- Data Structures & Algorithms
- Database Management Systems

ACHIEVEMENTS/CERTIFICATIONS

- **NPTEL**: The Joy of Computing using Python — Scored 90% (*Nov.'24*)

EDUCATION

- **Ramakrishna Mission Vivekananda Educational and Research Institute, Howrah**
  M.Sc. in Big Data Analytics
  - 2024 – Present   (Sem-1) CGPA: 7.22

- **Rajabazar Science College (University of Calcutta)**
  M.Sc. in Applied Mathematics
  - 2020 - 2022   CGPA: 8.33

- **Serampore College**
  B.Sc.(H) in Mathematics
  - 2016 – 2020   Score: 90.5%

- **Serampore Malina Lahiri Boys' Academy**
  Higher Secondary (10+2)
  - 2014 – 2016   Score: 85.4%

  Secondary (10)
  - 2008 – 2014   Score: 90.57%

TECHNICAL SKILLS

- **Programming Languages:** Python, C, R, SQL, LaTeX
- **Frameworks:** NumPy, Pandas, Scikit-learn, Matplotlib, PyTorch, OpenCV, Seaborn, Streamlit
- **Tools:** Git/GitHub, Google Colab, Jupyter Notebook, VS Code, MS Office
- **Operating Systems:** Windows, Linux (Ubuntu)

ACTIVITY

- **Fest Organiser**
  - Organizing Committee Member, Perceptron 2025 (annual departmental tech fest) [*Jan.'25*]

- **Chegg (Remote) - Subject Matter Expert (Mathematics)**
  - Provided detailed step-by-step solutions for Calculus and Advanced Mathematics problems

- **Private Tuition**
  - Class 11-12 and Engineering Mathematics [*2017 - 2024*]

HOBBIES

- Reading storybooks, watching movies and anime, and photography.