

## EDUCATION

**University of Pennsylvania (School of Engineering and Applied Science)**

Philadelphia, PA

*Master of Science in Engineering (MSE) in Data Science; GPA 3.9/4.0*

Aug 2023 – May 2025

**Coursework:** Adv. Deep Learning (Diffusion models, LLMs, Multimodal architectures), Generative Modeling, Adv. Machine Perception, Machine Learning, Statistical/Probability models in Marketing, Database & Information Systems

**Kirori Mal College (KMC – University of Delhi)**

Delhi, India

*Bachelor of Science (BS) in Statistics; GPA: 8.11/10*

July 2017 – Aug 2020

**Coursework:** Adv. Probability, Calculus, Linear algebra, Real Analysis, Statistical Inference, Time Series, Op. Research

## EXPERIENCE

Research Intern, **Computational Social Listening Lab (UPenn)**

May 2024 – Present

- **Research Goal:** Working on identifying misinformation on social media (FB posts, YouTube interactions) and whether or not it relates to health outcomes for people categorized on the basis of race (white/black) & urbanity (rural/urban).
- Developed a URL based misinformation-detection model that detected around 1k misinformed posts out of 1mm FB posts.
- Implemented sentiment analysis using a pre-trained '**DistilBERT**' Transformer model to evaluate user emotions from social media posts, leading to insights on engagement patterns segmented by race and urbanity.
- Unified data from various online survey platforms in a secured server via MySQL and performed feature engineering in Pandas to prepare data for further downstream tasks.

Data Science Intern, **Universal Media (PA, USA)**

May 2024 – Aug 2024

- Architected and implemented Azure SQL Database solutions, encompassing data pipelines, ETL processes, and DDL scripts to enhance data management and reporting capabilities.
- Led the development of **3+ data pipelines** using Azure Data Factory, facilitating the seamless ingestion and transformation of diverse data sources into the Azure environment.
- Authored **5 stored procedures** in SQL, automating repetitive tasks and improving query performance by over 30%.
- Developed and maintained 2 Power BI dashboards, utilizing DAX and Power Query to optimize data models, which provided actionable insights to client strategy teams.

Assistant Manager, **IIFL Finance Ltd**

Apr 2022 – July 2023

- Created **10+** paginated reports on Power BI Report builder leveraging SSRS (SQL Server Report Services) functionalities to help the senior management track the business performance of 1000+ branches across the country.
- **Key Projects:**
  - **Digital Adoption:** Performed analysis to ascertain the features of the customers opting for digital loan disbursals. Built a Random Forest model on Azure ML to scope out potential customers and drive digital revenue with an **accuracy of 90%**.
  - **Migration:** Optimized & migrated complex SQL queries from an obsolete database server to a new one with zero downtime or loss of data that improved the **reporting services by nearly 40%**.

## SELECTED PROJECTS

- **AI derived RAG (2024):** Developed a novel extension to RAG systems using the Mixtral-8x7B model. Achieved a 15% improvement in QA accuracy and context retrieval relevance compared to baseline systems, leveraging LLM-derived documents like summaries and example questions to enhance performance in long-context QA tasks. (PyTorch) [\[Github Link\]](#)
- **Marvel Bot (2024):** Engineered a conversational LLM app using LangChain and RAG, integrating Ollama to optimize three quantized models. Web scraped 4+ Marvel Wikipedia pages and deployed the solution on Streamlit, ensuring real-time, context-aware responses and efficient memory usage. [\[Github Link\]](#)
- **Traversability Estimation (2023):** Developed a terrain classification model using Semantic Segmentation and an attention-enhanced Fully Convolutional Network, achieving a 2% improvement in IoU. Enhanced off-road navigation for autonomous vehicles by optimizing path planning and terrain adaptability. (Pytorch, SkLearn, Google Colab) [\[Github Link\]](#)

## TECHNICAL SKILLS

**Programming & Skills:** Python, MySQL, Java, R, Git, React, NodeJS, MongoDB, MS office, MATLAB, JavaScript, HTML/CSS

**Software & Tools:** VS code, PyTorch, Eclipse, Cloudera, Jupyter, AWS Sagemaker, AWS Bedrock, DAX Studio, SSMS, CUDA, LaTeX

**Certifications:** Machine Learning Specialization, Deep Learning Specialization, Data Science for SQL, Statistical Analysis with R

## EXTRA-CURRICULAR and ACHIEVEMENTS

**Theatre:** Core Team Member (The Players). Lead Actor and auditioned for a brand advertisement and two short films.

**Sports:** District-level Cricket player & represented my college in Basketball at the **zonal level**.

**Community:** Collaborated with National Service Scheme (NSS), Delhi University & worked toward child empowerment.