Aditi Gupta

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Education

- **The International Institute of Information Technology Hyderabad (IIITH)** — India
  M.S. by Research in Computer Science and Engineering(CSE), GPA: 8.76/10.00 — *July 2024-Present*
- **Indian Institute of Science Education and Research Bhopal (IISER)** — India
  B.S. Electrical Engineering and Computer Sciences (EECS) — *Nov.2020-May 2024*

Interests and Skills

- **Technical Skills:** Data Structures, Machine Learning, Deep Learning, Natural Language Processing (NLP)
- **Programming Languages:** C++, Python (Django, Flask, FastAPI), JavaScript (React, Node.js, Express.js), R (for statistical analysis), Java (basics)
- **Libraries & Platforms:** NumPy, Pandas, Matplotlib, Seaborn, Sklearn, NLTK, TensorFlow, MATLAB

Research Experience

- **Requirements Engineering using Generative AI: Prompting Patterns** — IISER Bhopal
  BS Thesis, Supervisor: Prof. Arpit Sharma, Report — *Jan.2024-April2024*
  - Integrated **Generative AI** to automate and improve context interpretation of crowdRE requirements. Applied supervised machine learning, neural networks, and BERT models, achieving an 80% classification accuracy.
  - Evaluated the effectiveness of custom prompt patterns with other models based on **Zero-shot, Few-shot, and Chain of Thoughts** learning in guiding GPT-3.5 Turbo for accurate classification tasks.
  - Developed **Reprompting and Reinforcement Generative Prompting** methods, increasing the F-1 score by **8-10%** for better precision in requirement extraction.

Projects

- **DigitVision: CNN vs Autoencoder**
  - Developed a CNN from scratch for digit recognition, achieving **95%** classification accuracy on the **modified Multi-MNIST dataset**. Compared CNN autoencoders with MLP and PCA autoencoders, with the CNN autoencoder outperforming others at **92%** accuracy.
- **Melody Matcher: Recommender System using Matrix Factorization**
  - Built a recommender system model using **matrix factorization and latent factor models**, achieving a **15%** accuracy improvement on benchmark datasets. Optimized latent factors to uncover hidden user-item interactions, enhancing personalization and recommendation quality.
- **Data Summarization Web App**
  - Developed an NLP web application using Hugging Face API for abstractive data summarization, achieving a **BLEU score of 32** and reducing the average input document length by **85%** while retaining key information.
  - Utilized Python (Flask) for backend and HTML/CSS for frontend development, handling over 1000+ API requests per day with an average response time of **200 ms**.
- **Removing Duplicate questions on quora** — *Mar.2024*
  - Built a deep learning model to predict whether one question is a duplicate of another using **Siamese Networks(MaLSTM)**. Achieved an F1-score of **0.83** on the Quora duplicate questions dataset, reducing redundant data entries by **72%** in the test set. Optimized the model with Adam optimizer and achieved a validation accuracy of **87.6%**.
- **SVM Optimization for Non-Linearly Separable Data**
  - Built an SVM model from scratch for cancer/normal patient classification with **94%** accuracy using kernel functions and soft-margin SVM. Optimized the dual form via **quadratic programming**, achieving 92% precision and 90% recall while reducing computational cost by **30%**.

CourseWork and Certifications

- Intro to NLP • Advanced Optimization • Statistical Methods in AI • Topics in Applied Optimization • Data Structures and Algorithms • Data Science and Machine Learning • Database Management System • Computer Organization • TensorFlow Developer Certificate (Udemy) • The Complete Neural Networks Bootcamp

Achievements

- Teaching Assistantship in **Statistical Methods in AI(SMAI)** course under C.V Jawahar Sir.
- Selected for the prestigious **Amazon ML Summer School 2024**, as a Mentee.
- **500+** coding problems solve in different coding platforms and **5 star** coder in **Hacker Rank**.
- Achieved finalist position in **SIH 2023 (Smart India Hackathon)** for innovative solution in Hardware Domain.
- Winner of **Curveball E-Cell Competition (IISERB)** presenting idea of an Badminton Shuttle Launcher.