

SOMESH AGRAWAL

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EDUCATION

Indian Institute of Technology Delhi

Masters in Artificial Intelligence (CGPA 9.00)

Delhi, India

(2024 - Present)

Relevant Coursework: Machine Learning, Artificial Intelligence, Deep Learning, Computer Vision, Data Mining, Natural Language Processing, Large Language Models, Ethics in AI, Multivariate Statistics

Indian Institute of Technology, Goa

Bachelors in Mathematics and Computer Science (CGPA 8.39)

Goa, India

(2020 - 2024)

EXPERIENCE

Research and Development Intern - Siemens EDA

July 2023 - December 2023

- Optimized **VHDL** compilation pipelines in the **High-Performance Engine**, enhancing online, high-throughput execution.
- Improved efficiency by **reducing memory utilization** to **95%** on complex workloads, enabling faster computation.
- Optimized **C language** codebase in **collaboration** with a **5-member team**, improving **execution time by 2%** and enhancing reliability through low-latency techniques, efficient debugging, and **regression testing**.

PUBLICATIONS

- Agrawal, S., Saha, S. *Domain-Adaptive One-Shot Target Presence Detection.* (**IEEE DELCON 2025**) (Submitted, 2025).
 - Developed a **training-free SAM-based** inference framework, **enhancing cross-domain prediction reliability** through **confidence score-driven ensembling** and **IoU-based cyclic consistency**.
 - Achieved **88% accuracy** and **95% precision** in **20+ cross domain (Resolution Color Space)** experiments.

PROJECTS

Intent Based Counterspeech Generation using LLMs ([Link](#))

(Jan 2025- Apr 2025)

- Addressed the challenge of generating Intent-Specific Counter Speech to mitigate online hate speech effectively.
- Fine-tuned **T5** and **GPT-2** models on the **13K+ dataset**, applying **Prompt Tuning** and **Self-Contrastive learning**.
- Attained **ROUGE 22.52**, **BLEU 13.65**, and **BERTScore(F1) 86.24**, surpassing baseline T5 models.

Stock Price Forecasting with Frequency Decomposition and Deep Learning ([Link](#))

(Apr 2025- May 2025)

- Conducted **Time-Series analysis** on multiple indices (S&P 500, Dow Jones, DAX, Nikkei 225).
- Experimented model variants combining **Frequency Decomposition** with **Sequential Deep Learning** models.
- Achieved best performance with **CNN-LSTM-CEEMD**, outperforming baselines lacking frequency decomposition(e.g., **S&P 500: RMSE 11.16, MAE 8.36, MAPE 28.72%**).

Grammatical Error Correction with LLMs ([Link](#))

(Jan 2025- Apr 2025)

- Aimed to correct grammatical errors in written communication, requiring automated correction.
- Curated **50K+ Sentence Dataset** and **Fine-Tuned T5-Base** and **BART-Large** models, using LoRA for efficient training.
- Achieved a **BERTScore 82.02** with **T5-Base**, outperforming **BART-Large (BERTScore 77.23)** on the test set.

User Personality Prediction in E-Commerce ([Link](#))

(Mar 2025- Apr 2025)

- Improved **E-commerce Recommendations** by modeling **User Personality** traits beyond click and purchase history.
- Developed **Graph Neural Networks (GCN, GraphSAGE, GAT)** in **PyTorch** for **Multi-label Personality prediction**.
- Outperformed other models using the **Graph Convolution Network**, achieving **85.67% accuracy** and **0.72 Micro-F1**.

SKILLS

Languages and Tools

C, C++, Python(Scikit-Learn, HuggingFace, PyTorch, Tensorflow, Numpy, Pandas), MySQL, Linux, Git

Area of Expertise

Machine Learning, Deep Learning, Large Language Models (LLM), NLP, Computer Vision

ACHIEVEMENTS

- Secured a rank within **5300** in **IIT-JEE Advanced 2020**, among **150,000+** participants.
- Awarded **Gold** and **Silver Medals** in **National Science Olympiad** for two consecutive years.