UTKARSH UJWAL

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Professional Summary

Motivated and detail-oriented Data Scientist with a strong foundation in machine learning, deep learning, NLP and statistical analysis. Proven track record of research and development in AI-driven projects with a focus on building trustworthy, reliable and safe NLP systems.

EXPERIENCE

Applied AI Scientist- NLP *November 2024 - June 2025*

- Onboarded 5 new Guardrailing metrics in the Guardrail SDK for fine-grained detection.
- Implemented the Explainability Lite for intrinsic guardrailing detection models for making the guardrailing detection more interpretable.
- Migrated metrics from AWS Cloud Native offering to Kubernetes for on prem version
- Implemented various techniques for redteaming of prompts for security assessment of prompts.

Applied AI Engineer Intern *July 2024 - November 2024*
Inspeq AI Pvt Ltd, Bangalore

- Implemented a Root Cause Analysis feature using an LLM deployed on AWS SageMaker to improve detection and interpretation of guardrail violations in LLM responses.

Data Science Intern *May 2024 - July 2024*
University of Liverpool, Liverpool, UK

- **Project: Interpretable Early Risk Prediction of Eating Disorders (IJCAI Workshop 2025)**
- **Supervisors: Dr Tulika Saha and Dr Procheta Sen**
- Co-authored **"Analyzing Social Media Posts for Anorexia Questionnaire Insights for Individuals"**, accepted as a poster presentation at the IJCAI 2025 Workshop on **Empowering Women of Colour in AI-Driven Mental Health Research.**
- Invited to submit an extended version for CEUR Workshop Proceedings and present a short talk.
- Conducted detailed statistical analysis to identify response patterns and deviations, providing insights into user behavior and potential risk factors.
- Surpassed 2023's best performing model by 15% in accurately predicting the severity of eating disorders
- Applied a food-based BERT (Bidirectional Encoder Representations from Transformers) model to filter and categorize responses, enhancing the relevance and accuracy of the data.
- Applied a range of methodologies which involved LSTM with Attention Heads, Zero shot prompting of LLMs like Mistral 7B, LLama 8b and using sentence embedding representation from sentence transformers to enhance the input data.

NLP-Researcher *March 2024 - May 2024*
University of Liverpool, Liverpool UK

- **Project: Benchmarking Legal Longform Question Answering capabilities with Interpretability in LLMs (CIKM 2024)**
- **Supervisor: Dr Tulika Saha**
- Paper accepted in CIKM 2024 conference Idaho,USA
- Created a synthetic Long form Question Answering Dataset L2FQA with 18,000 samples in it which incorporates reasoning as a layer to enhance the reasoning ability of LLM for legal questions.
- Consistently achieved improved ROUGE score and BERT scores over finetuning 6 LLMs ranging from 0.5B parameter to 7B Parameters on this dataset.
- Conducted 5 different experiments on each model which encompassed both in context (n-shot prompting) and finetuning with and without results.

Master's Thesis *June 2023 - Feb 2024*
University of Liverpool, Remote

- **Interpretable Scene Graph Generation by Merging Visual and Textual Dependencies**
- **Supervisors: Dr Tulika Saha and Dr. Swarnendu Ghosh**
- Developed an end-to-end ensemble with 18 different combinations of object detection, image captioning using Vision Language Models and dependency parsing-based graph generation for Visual Genome Dataset.
- Developed a visualization algorithm for both individual scene graphlets generation and merging them based on a set overlap threshold among bounding boxes of a region.
- Added a few more use cases to the graph generation algorithm to solve more nuanced graph generation cases.

EDUCATION

Master of Science in Data Science and Artificial Intelligence *2022 - 2024*
University of Liverpool, Liverpool, UK

- Awards: Commonwealth Postgraduate Bursary and Attainment of Academic Excellence award (£2500 each)
- Overall Grade: Distinction
- Achievements: Programming Fundamentals (93%), Applied AI (89%), MSc Project (87%), Data Mining (83%), Computational Intelligence (81%)

Bachelor of Technology in Marine Engineering *2015 - 2020*
Indian Maritime University, MERI Kolkata, Kolkata, India

- Awards: Merit Based Scholarships in 5 semesters
- Overall Grade: First Class with Distinction (80%)
- Achievements: Secured All India Rank 63 in IMU Entrance Examination

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SUBMITTED PAPERS

- (Ujwal et al. 2025), **'Analyzing Social Media Posts for Anorexia Questionnaire Insights for Individuals'** Accepted for **poster presentation** at **IJCAI 2025 Workshop on Empowering Women of Color in AI-Driven Mental Health Research**; invited for short talk and publication in **CEUR Workshop Proceedings**.
- (Ujwal et al 2024), **"Reasoning Before Responding Towards Legal Long Form Question Answering with Interpretability," Accepted in CIKM 2024**.

OTHER

Technical Skills

- **Programming Languages:** Python , SQL
- **Dashboarding, Analytics & Visualization:** Pandas,Seaborn, Matplotlib
- **Tools:**Linux, Git, Docker, Makefile
- **Cloud Native Framework**: AWS Sagemaker, Lambda
- **Agentic AI**: CrewAI, Langchain
- **Deep Learning Libraries:** PyTorch
- **Machine Learning Libraries:** Scikit-learn
- **Backend Framework:** FastAPI
- **Frontend Framework:** Streamlit, Gradio