Aditya Kulkarni

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US Citizen | Authorized to work in the US

Education

University of Illinois Urbana-Champaign **August 2024 – December 2025 (Expected)**
Master of Computer Science *Urbana, Illinois*
Relevant Coursework: *Distributed Systems, Artificial Intelligence, Database Systems*

Pune Institute of Computer Technology **July 2020 – July 2024**
Bachelor of Engineering in Computer Engineering | ***GPA: 9.1/10*** *Pune, India*
Relevant Coursework: *Data Structures and Algorithms, Object Oriented Programming, Machine Learning*

Technical Skills

Languages: Python, C++, Go, Java
Frameworks: NodeJS, Flask, ExpressJS
Libraries: OpenCV, Tensorflow, Keras, Pytorch, Pandas, NumPy, Matplotlib, Scikit-Learn
Databases: MySQL, MongoDB

Experience

L3 Cube (PICT Linux User group) **August 2023 – August 2024**
Research & Project Intern *Pune, India*

- Worked on dataset generation for low-resource Indic languages for question-answering by developing a robust approach for calculating the exact span of answers using dynamic programming and establishing a pipeline for data generation.
- Researched on Automatic Assessment of Multi-Modal Answer Sheets in STEM Domain with a focus on evaluation of diagrams utilizing CRAFT and LLMs.
- Developed the pipeline for automatically translating and storing the translation for 10 low resource languages.
- Technologies used: Pytorch, Tensorflow, YOLOv5, NLTK, Mistral AI

Periwinkle Technologies Pvt. Ltd. **January 2023 – June 2023**
Software Intern *Pune, India*

- Curated a proprietary dataset comprising **1000+** images for classifying anomalies.
- Developed a CNN model to detect scratches on a proprietary glass component with **78%** accuracy and created a pipeline for image storage and model execution.
- Worked on developing a new Deep Learning project centered on **Fetal Health**.
- Technologies used: OpenCV, Python, Scikit-learn, Tensorflow

Projects

High Throughput Distributed System | *Golang* **August 2024 - Present**

- Built a **distributed system** from scratch in Golang, successfully deployed and tested across a cluster of 10 VMs.
- Implemented data sharding, the SWIM protocol, fault tolerance, and gossip mechanisms, complemented by thorough unit testing to ensure system reliability.

Sarcasm Generator | *Tensorflow, LLM, Mistral AI, BERT* **May 2024 - June 2024**

- Leveraged a Reddit Sarcasm Dataset to build a sophisticated system for generating sarcastic comments.
- Utilized the **Mistral-7b** API for prompt-based sarcasm generation and fine-tuned **GPT-2** and **BERT** to enhance sarcastic comment creation.
- Designed a sarcasm detection model to assess the accuracy of generated text.
- Achieved an accuracy of **71%** for prompt-based model.

GraderGuru | *Pytorch, YOLOv5, Mistral Ai LLM, FastApi* **November 2023 - April 2024**

- Led the development of a **ML model** for identifying, analyzing and grading diagrams in STEM answer sheets.
- Utilized **YOLOv5** and **Azure OCR** for the model development pipeline.
- Used **Mistral LLM** for evaluating diagrams.

Publications

- Automated Answer and Diagram Scoring in the STEM Domain: A literature review — **INCET'24**
- MahaSQuAD: Bridging Linguistic Divides in Marathi Question-Answering — **ICON'23**
- Automated Assessment of Multimodal Answer Sheets in the STEM domain — **Arxiv**