ADITYA KULKARNI

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Education

University of Illinois Urbana-Champaign   **August 2024 – Present**
Master of Computer Science   *Urbana, Illinois*

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
- Database Management Systems
- Data Science and Big Data Analytics
- Distributed Systems
- Artificial Intelligence
- Object Oriented Programming

Technical Skills

Languages: Python, C++, Java, Go
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*

- Achieved **83%** accuracy by fine-tuning **BERT** (Indic-BERT & MuRIL) models on Maha-NLP datasets.
- Created a Marathi Language Q&A benchmark dataset **exceeding 130K** entries.
- Developed a precise span detection algorithm, enhancing accuracy by **14%** compared to benchmark values.
- Published a research paper titled 'MahaSQuAD: Bridging Linguistic Divides in Marathi Question-Answering' at **ICON'23**.
- Expanded the Q&A dataset to **7 regional indic langauges**.
- 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, attaining an accuracy of **78%**.
- Worked on developing a new Deep Learning project centered on **Fetal Health**.
- Technologies used: OpenCV, Python, Scikit-learn, Tensorflow

Projects

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.

SQL Parser | *Golang*   **April 2024 - May 2024**

- Developed a custom **SQL** lexer and parser in **Go** to tokenize and interpret SQL queries.
- Implemented a robust tokenization system to identify and categorize SQL keywords, operators, and identifiers.
- Integrated support for different storage engines (**B+ tree**) within the SQL parsing logic

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.
- Created an independent labelled flowchart diagram dataset.
- Utilized **YOLOv5** and **Azure OCR** for the model development pipeline.
- Used **Mistral LLM** for evaluating diagrams.