Rishit Chugh

rishitchugh@gmail.com ❖github.com/R-C101 ❖ www.linkedin.com/in/rishit-chugh/

EDUCATION

VIT Bhopal (Bachelors in Technology)
2021-2025
BTech Computer Science (specialization in Artificial Intelligence and Machine Learning)
Cumulative GPA: 9.05/10

RESEARCH EXPERIENCE

- **Title**: RECAP: A Resource-Efficient Method for Adversarial Prompting in Large Language Models
- **Duration:** June 2024 - October 2024
- **Status:** Under Review
- **Description:** RECAP is a resource-efficient method for adversarial prompting in Large Language Models (LLMs), designed to reduce computational costs while maintaining comparable success rates to methods like GCG and PEZ. It improves accessibility for black-box LLMs, offering a cost-effective solution for companies with limited resources. By leveraging pre-generated token sets, RECAP reduces training times and highlights the potential for future optimization. The method explores security implications, promoting ethical use, and proposes expanding the RAG database and minimizing training times as future research directions.

INTERNSHIPS

DMI Finance Pvt Ltd **July 2024 – October 2024**
LLM Intern

Technologies Used: AWS, VLLM, Transformers, PyTorch, Tensorflow, PEFT, QLORAs

- Assisted in developing an LLM Guardrailing and Safety Product for businesses, creating guardrailing models for toxicity, jailbreak detection, and PII masking, achieving 30% better results than Meta's Llama Guard through efficient fine-tuning.
- Implemented VLLM support to reduce inference times by 5x with parallel inference on multiple GPUs and developed an orchestrator for seamless integration of prompt conversion, data augmentation, response generation, and scoring.
- Integrated state-of-the-art adversarial attack methods, achieving a 60% success rate in testing LLM robustness, and developed RAG and fact hallucination testing algorithms, achieving 80% success in hosted LLMs like ChatGPT and Gemini.
- Created production-ready test cases for stress testing and deployed solutions on AWS EC2 and Docker images for demonstration and availability.

Lilac Mosaic **January 2024 – March 2024**
AI/ML Intern

Technologies Used: OpenCV, OpenAI, NLTK, Firebase, FastAPI, Google Cloud, Gemini

- Developed FAQ and RAG chatbot using Transformers and Dialogflow, achieving a 90% reduction in support inquiries . Deployed the backend on Google Cloud Platform for flexibility.
- Implemented image similarity and recommendation systems using OpenCV and color histograms.
- Deployed the solutions on Firebase for scalability and real-time performance.

- Developed and deployed automation scripts for checkout, email, and reviews using cron and Sendgrid API as firebase cloud functions to enhance customer experience and support retention
- Developed an AI assisted personalized system that offers discounts based on a survey taken at check-in time.

PROJECTS

OKULARY **February 2024 - March 2024**

- Designed and developed an AI-powered educational platform that leverages NLP, Computer Vision (OpenCV), and Transformers to streamline teaching tasks, such as automating attendance tracking, assignment grading, and plagiarism detection.
- Integrated data visualization tools to create intuitive dashboards, providing teachers with real-time analytics on student performance and attendance trends.
- Focused on enhancing teacher efficiency, reducing manual workload by creating automated systems that are adaptable to various teaching environments.
- Applied transformers for advanced text analysis in assignment evaluation, ensuring accurate detection of similarities and plagiarism across large datasets.

CVAR **April 2024 - May 2024**

- Developed a comprehensive football analysis system utilizing YOLO for object detection, OpenCV for image processing, and numpy for data manipulation to track players, referees, and the ball with high precision during live games.
- Implemented features like ball possession tracking, player speed estimation, and camera movement analysis to provide in-depth game insights, enhancing decision-making for coaches and analysts.
- Leveraged SuperVision to extract detailed player movement data, offering granular insights into gameplay, positioning, and strategy.
- Delivered an automated system that interpolates frames where the ball misses being detected, to ensure a continuous running feed.

OPEN SOURCE CONTRIBUTIONS

Omdena AI VITB Chapter (Operations Manager and Co-Lead):

- **Water Quality Monitoring through GIS Techniques for Bhopal** **February 2023 - April 2023**
  - Led a project to monitor the water quality of three major lakes in Bhopal using GIS techniques for data collection and analysis. Overcame challenges related to terrain and access to remote areas, ensuring timely completion and data integrity. Collaborated with local environmental agencies to provide insights on pollution levels, influencing sustainable lake management decisions. Organized team responsibilities to ensure efficient workflows and effective integration of GIS tools for analyzing water quality parameters.
- **Road Inspection in Bhopal and Mexico (International Collaboration)** **March 2024**
  - Contributed to an international collaboration between Bhopal and Mexico on road quality monitoring using a Computer Vision-based system. Developed a live road detection system utilizing real-time image processing to identify road conditions for public access in route planning and safety. Leveraged YOLO object detection and OpenCV to create a robust system for detecting potholes, cracks, and other irregularities, enhancing road safety and urban infrastructure monitoring.

SKILLS

Languages and Software: Python, R, HTML, CSS, Tableau, Figma, Docker, Firebase, AWS, Git

Frameworks and Libraries: Pytorch, NLTK, Tensorflow, Spacy, Pandas, PIL, OpenCV, Matplotlib, Seaborn, SK-Learn, Langchain, Transformers