

Vivek Modi

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Education

MS in Computer Science
B.Tech in Computer Science

Rutgers University
Indian Institute of Technology, Gandhinagar

2022 - 2024
2018 - 2022

Skills

- **Languages:** Python, C, C++, JavaScript, React.js, Node.js, HTML, CSS, ML, NLP, MLOps, OAuth 2.0
- **Framework:** Langchain, PyTorch, Tensorflow, PySpark, Scikit-Learn, Pandas, Numpy, Matplotlib, Huggingface
- **Technology:** LLM, Generative AI, RAG, Fine-Tune, PEFT, LoRA, Kafka, Argo, Jenkins
- **Tools:** MySQL, Django, Flask, Latex, AWS, MongoDB, Docker, Jira, Git, CI/CD

Professional Experience

- **Machine Learning Engineer(GenAI/ML), Optimoz, Rockville, MD** [May, 2024 - Present]
 - Implemented **citation extraction** using LLMs combined with OCR on **scanned PDFs and asset files (PDF)** to enhance indexing and retrieval, showcasing detailed references for LLM responses.
 - **Fine-tuned** domain-specific LLMs for medical data, enhancing accuracy in **clinical information** extraction and Evaluation tasks.
 - Optimized existing chat service architecture, reducing model response time on asset selection by **85%** through backend refactoring and model pipeline adjustments.
 - Developed and deployed a **custom LLM solution** for the Optalk.ai platform using Flask and Kafka for scalable, low-latency chat interactions.
 - Leveraged LangGraph and Retrieval-Augmented Generation (RAG) to build intelligent agent workflows.
- **Graduate Research Assistant, Machine Learning & Bioinformatics Lab, Rutgers University** [Jan, 2023 - May, 2024]
 - Initiated a comprehensive deep learning pipeline to **identify human activities**, enhancing machine's understanding of complex movements.
 - Streamlined a ML learning-based pipeline to identify **protein subcellular sequences** working under the guidance of Dr. Iman Dehzangi.
- **Machine Learning Intern, Capgemini, Gandhinagar, India** [May, 2020-Aug, 2020]
 - Developed '**Priority Mailbox**' and Sentiment Analysis **COM add-in** for **Microsoft Office Outlook**, streamlining email management and improved user experience by utilizing sentiment analysis to prioritize mails.
 - Employed Django, **ML algorithms** utilizing two distinct models, and SQLite database as the core technologies, Improved mail prioritization using multiple parameters, including initial click time and mail read duration.
 - Contributed a pivotal role in **optimizing mail organization** and enhancing productivity within Outlook.

Projects

- **NLP research paper "ComicBot: ChatBot Generating Jokes along with GIF"** [Aug, 2020-Jan, 2021]
 - Authored an innovative research paper focused on creating jokes paired with GIFs utilizing the **knowBERT** model.
 - Implemented sarcasm recognition and emotional classification system to align GIFs with corresponding sentiment with **most related GIFs**.
 - Introduced "**EmotionGIF**," a novel dataset curated to categorize GIFs based on emotive labels and proposed a unique **style transfer** methodology for producing humorous content.
- **Protein Subcellular Localization Prediction Using Machine Learning** [Sep, 2023-Jan, 2024]
 - Utilized machine learning techniques to predict **protein subcellular localization** in Gram-positive bacteria, focusing on four cellular locations.
 - Extracted and analyzed protein sequence features like Occurrence and Composition, and attributes, generating **87.237% accuracy** and prepared labeled datasets for multi-class classification tasks.
 - Enhanced understanding of protein functionality in cellular processes, contributing to advancements in bioinformatics and computational biology.
- **Human Activity Recognition(HAR) Using Machine Learning under Prof. Iman Dehzangi** [Nov, 2022-May, 2023]
 - Employed CNN, LSTM, **Multimodal Transformer**, and **Action Transformer**, improving detection accuracies.
 - Modernised and fine-tuned machine learning models with diverse datasets like mPOSE-21, and UCI HAR and achieved notable performance metrics: Multimodal (**84.05%** F1-score), Action Transformer (**88.4%** accuracy).
 - Contributed to advancing Human Activity Recognition through machine learning.

Achievements

- **Vice President**, Graduate Student Organization, Rutgers University.
- **Teaching Assistant** at LEAP Academy University Charter School, New Jersey.
- Secured an **All India Rank of 701** out of 1.3 million students in the JEE ADVANCED 2018.
- Ranked **4th** in **INTER IIT Tech meet** at IIT Bombay for Campus Sustainability Challenge.