Bhavna Matwani

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Education

New York University Sep 2022 - May 2024
Master of Science in Computer Science | GPA - 3.9/4

Sardar Vallabhbhai National Institute of Technology, Surat Jul 2018 - May 2022
Bachelor of Technology in Electrical Engineering | GPA - 8.86/10

Experience

Software Engineer Intern May 2023 - Aug 2023
Vimbly Group, New York, NY

- Developed the SmartSMS Image Generator, an AI-powered tool that transforms text prompts into engaging images, bolstering customer interactions for over 100 million messages across 4,000+ businesses using LLMs and Image Generation.
- Incorporated comprehensive activity logs and advanced account management options within the Customer Support Panel.
- Outlined feature specifications to gauge user adoption and identified areas of improvement for 3 Generative AI features.

Software Engineer Intern May 2021 - Jul 2021
Mastercard Technologies, Pune

- Built an Angular GUI tool to visualize and track transactions in real time, reducing error resolution time by 40%.
- Deployed a Spring Boot application on Heroku to streamline communication with the log aggregator.
- Scraped over 1 million logs using REST APIs, significantly boosting debugging efficiency by 50%.

Summer Research Scholar Jun 2020 - Dec 2020
Indian Institute of Science, Bangalore

- Conducted research to benchmark the performance of neural networks on datasets, employing advanced evaluation metrics.
- Performed in-depth analysis of CapsNet's accuracy by incorporating a class-independent decoder, removing reconstruction loss, and experimenting with 5 different activation functions.
- Achieved a validation accuracy of 81% through over 10 different model modifications, improving model robustness by 15%.

Skills

Languages: C++, Python, TypeScript, JavaScript, C, MATLAB, SQL, HTML, Java, Scala, OCaml, Embedded C
Frameworks/Libraries: PyTorch, Keras, TensorFlow, OpenCV, Pandas, OpenAI, Cuda, NCU
Tools: Node.js, React, Angular, Spring Boot, Maven, Docker, OpenShift, Git, Swagger/OpenAPI, Flask, GitHub Actions, GraphQL
Cloud and Big Data Technologies: GCP, AWS, HDFS, MapReduce, Hive, Trino, Zookeeper, Kafka, Selenium, Kubernetes

Projects

Enhanced LLM Responses with RAG System Prof. I-Hsin Chung, Prof. Hao Yu
TinyLLaMa, all-MiniLM-L6-v2, Docker, GKE, ChromaDB

- Engineered a cloud based RAG system, enhancing LLM accuracy and contextual relevance by 60% compared to vanilla LLM.
- Leveraged TinyLLaMA for responses and all-MiniLM-L6-v2 for query embedding, achieving precise and enriched outputs.
- Boosted system responsiveness and scalability by 80% using Docker and Kubernetes.

FrameForesight Prof. Yann LeCun, Prof. A. Canziani
PyTorch, UNet, SimVP

- Trained frame prediction model on unlabeled video dataset, predicting the 22nd frame from the first 11 frames.
- Applied results to a semantic segmentation model trained on a subset of videos, classifying 49 object combinations.
- Realized a performance improvement of over 15% in accuracy compared to the baseline model.

Racing Bib Detection for Runner Segmentation and Privacy in Marathon Images Prof. Rob Fergus
YOLOv4, MASK R-CNN, Image Processing

- Utilized YOLOv4 for precise racing bib detection and MASK R-CNN to isolate runners in photos.
- Integrated privacy-preserving blurring techniques to ethically highlight participants.

Assessment of Safety Metrics Across Neighborhoods in New York City (NYC) Prof. Yang Tang
MapReduce, Hive, Tableau, HDFS

- Designed a Big Data Analytics tool to assess NYC neighborhood safety, providing detailed safety rankings by Zip Code.
- Generated year-wise and zipcode-wise safety heatmaps to visualize safety patterns and support targeted interventions.

Additional Roles

Recitation Leader, Calculus 1 - *Led sessions for 150+ students, facilitating their understanding of concepts.*
Grader, Math Techniques in CS Applications - *Conducted thorough evaluations and assessments for the course.*