HRUDAY TEJ AKKALADEVI

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EDUCATION

University of Florida **August 2023 - May 2025**
Master of Science, Computer and Information Science and Engineering (GPA: 3.83/4)
Coursework: NLP, Machine Learning Engineering, Analysis of Algorithms, Computer Networks, Distributed Operating Systems

EXPERIENCE

i-Heal (Intelligent Health) | ***Graduate Research Assistant*** | ***Backend-AI Engineer*** **September 2023 - Present**

- Architecting a robust Backend AI Data Pipeline Solution utilizing MongoDB, PostgreSQL hosted on Docker/Apptainer as a consolidated storage solution for over 30GB of highly unstructured EHR data. Enhanced the querying engine's speed by more than 20% and improving retrieval accuracy by 15% for retrieval based NLP models that perform Human Text to SQL query generation.
- Fine-tuned and constructed Retrieval-Augmented Generation (RAG) systems for healthcare domain chatbots to enhance the capabilities of current cutting-edge Large Language Models (LLMs) like Llama-2 and GPT-4 by 30% (measured by BLEU, LSA, Perplexity, BERTScore) in the domain. Thus, surpassing the current general-purpose LLMs (Llama, GPT) and RoBERTa.

JP Morgan Chase | ***Software Engineer*** | ***Backend-DevOps Engineer*** **July 2021 - July 2023**

- Led the complete SDLC of a high-impact Big Data Solution that ensures secure interaction with Amazon EMR clusters and Big Data Engineers, enabling seamless submission and execution of Big Data jobs, improving the operational efficiency by 90%.
- Engineered critical features, including User Authentication, Lineage, and REST API endpoints for EMR cluster management tasks such as creation, repaving, Spark job execution, and Livy sessions, by developing a Terraform codebase to deploy AWS Lambda functions and other services, leading to a 70% improvement in system reliability and a 40% reduction in issue resolution time.
- Integrated Jenkins with the EMR Controller using Groovy scripts and SNS/SQS mechanisms to provide customers without IDAuth tokens additional methods for interacting with EMR clusters. This resulted in a 10% increase in customer engagement.
- Developed Grafana dashboards and housekeeping utilities, monitoring various actions and resources consumed by AWS services to help track, oversee unutilized idle resources thereby potentially reducing the clients' costs on EMR infrastructure by up to $100,000.
- Provided comprehensive support for enabling the product across multiple AWS regions by configuring terraform codebase, S3, lambda functions, Jenkins deployments, aiming to improve availability, which contributed to a 20% increase in customer count.
- As the Scrum Master and Release Manager, administered the implementation of a Continuous Integration and Continuous Delivery model in a robust Agile setting with blue-green deployments, resulting in the accelerated delivery of 30 features at a 10% increased speed making the process of migration between different versions easier for customers.

SKILLS

Languages: Java, Python, C++, Shell Script, HTML5/CSS3, Javascript.
AWS Services: Elastic Map Reduce, Lambdas, API Gateway, Security Groups, Load Balancers, EC2, S3, IAM, DynamoDB, SNS/SQS.
Frameworks: SpringBoot, .NET, Django, Flask, Flutter, ReactJS, Android Java, NodeJS.
Tools/Technologies: Docker, Kubernetes, Terraform, Git, Jenkins, JIRA, SQL, NoSQL, PostgreSQL, MongoDB, Grafana, REST APIs.

PROJECTS

RAG powered Clinical Text Summarization (Academic) | ***Llama, GPT, BERT, LSTM*** | *(GitHub)* **January 2024 – Present**

- Worked on end-to-end Fine Tuning of LLM's locking them to Healthcare Domain to provide important inferences from doctor-patient interactions using techniques like Lora and QLora to perform parameter efficient training, resulting in a 30% reduction in computational resources while exceeding the benchmark performance of traditional LSTM, BERT models.
- Utilized metrics like BERTScore, BLEU, Custom TF-IDF metric to compare the performance of Fine Tuning and RAG. This evaluation facilitated informed decision making, strategic parameter tuning, improving the model's performance by 10%.

Youngistaan Foundation (NGO) | ***JP Morgan Chase (Force For Good)*** | ***Flutter, AWS, DynamoDB*** **April 2022 - May 2023**

- Conceptualized and designed a Full Stack Mobile Application utilizing Flutter for the front-end AWS lambdas for the RESTful APIs and DynamoDB for the data storage. Achieved a notable 55% enhancement in the User Experience and Onboarding process.
- Executed different upgrades and features, like boosting Security, Database Model Designs, UI upgrades, and features like Geo-tracking, Notifications, and Google Maps Integration for the mobile application thereby automating 90% of the manual tasks and reducing the cost to the company by almost 95%.

Single Image Super Resolution (Academic) | ***GAN, CNN, Interpolation*** | *(GitHub)* **July 2020 – May 2021**

- Led a project focused on enhancing image quality through the application of Generative Adversarial Networks, Convolutional Neural Networks, and Interpolation Techniques resulting in a 70% improvement of the image quality measured utilizing the PSNR metric.
- Implemented concepts like Transfer Learning, Skip Connections, and Normalization to enhance the model's performance and reduce training time by 10%. Explored and applied advanced CNN and interpolation techniques to illustrate that GANs outperform traditional neural networks by more than 60%.

PUBLICATIONS

[1] Akkaladevi. Hruday Tej. "*Comparative Study of Single Image Super Resolution Techniques" - Proceedings of the International Conference on Emerging Trends in Circuit-Branch Technologies and Applications: (ETCTA-2021).* INSC International Publisher (IIP), 2021.