Sainath Talakanti

Portfolio

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Education

University of Georgia **August 2023 – May 2025**

Master of Science, Computer Science *GPA: 3.44*

Technical Skills

Programming Languages: Java, C, Python, JavaScript, HTML, CSS, Kotlin, Rust, Scala
Technologies/Frameworks: ReactJS, AngularJS, NodeJS, Spring Boot, RESTful APIs, JUnit, Docker, Kubernetes, AWS, EKS, EC2, CI/CD, Terraform, Jenkins, Apache Airflow, Hadoop, Apache Saprk, Kafka, ETL/datapipelines
Developer Tools: Linux, VS Code, Intellij IDE, Eclipse, Android Studio, Git, Maven, Cargo
Databases: MySQL, PostgreSQL, Neo4j, MongoDB

Experience

University of Georgia **August 2024 – May 2025**

Research Assistant *Athens, Georgia*

- Implemented RegPattern2Vec algorithm from a research paper to analyze semantic relationships in knowledge graphs using user-defined regular expressions, leveraging concepts from Automata Theory.
- Developed a modular Java application with Maven & tested using JUnit to generate graph embeddings for downstream tasks such as link prediction and node classification.
- Designed and integrated a custom plugin for the Neo4j graph database to support dynamic embedding generation directly within the database environment.
- Conducted link prediction performance evaluation using logistic regression, achieving cross-validated AUC scores between 0.70 and 0.90 and F1 scores up to 0.90 on large, complex graphs.

Virtusa **January 2023 – April 2023**

Software Developer Intern *Hyderabad, India*

- Developed a Currency Conversion web application using AngularJS, gaining practical experience in frontend development, Agile environment & software development lifecycle.
- Integrated third-party APIs to enable real-time currency exchange rate conversions.
- Containerized and deployed the application using Docker for efficient hosting and scalability.
- Designed and implemented dynamic UI components to enhance usability and user experience.

RAM Innovative Infotech **October 2022 – June 2023**

Full Stack Developer Intern *Hyderabad, India*

- Implemented two service-based models: Key Agreement Protocol that generates private keys for cloud entities using a certificate-less 0-RTT mechanism, and Task-based Dynamic Load Balancer that distributes data across multi-cloud environments using probability-based techniques.
- Developed user interfaces for end-users, cloud providers, and third-party services using Java Server Pages (JSP), Servlets, JDBC, and MySQL; deployed applications on the Apache Tomcat server.
- Enhanced security and reduced latency by implementing a certificate-less 0-RTT key agreement protocol, achieving a 60–90% cost reduction.
- Applied the Markov Chain Rule in the load balancer model, resulting in a 30% reduction in makespan and a 75% improvement in response time compared to previous approaches.

Projects

CloudMart - An E-Commerce Platform | *AWS, Terraform, OpenAI API* | Github

- Built and deployed a scalable AI-powered e-commerce platform using AWS EC2, EKS, and containerized microservices.
- Automated infrastructure with Terraform and set up end-to-end CI/CD using AWS CodePipeline, CodeBuild, and CodeDeploy.
- Integrated OpenAI API to deliver real-time, intelligent customer support through a conversational chat interface.

Prediction of Impacts of Climate Changes on Crops | *Python, Jupyter* | Github

- Built a data science application to predict environmental impacts on crop yields using large-scale datasets.
- Performed data cleaning and preprocessing to ensure high-quality inputs for modeling.
- Trained and evaluated regression and neural network models, achieving up to 80% prediction accuracy.

RustFL: A Federated learning Model using Rust | *Rust, Pytorch, Docker* | Github

- Designed a federated learning framework using PyTorch for secure, asynchronous training of machine learning models with privacy preservation.
- Implemented advanced features including Differential Privacy, Secure Multiparty Computation (SMPC), and asynchronous communication.
- Containerized the application with Docker for seamless deployment across diverse environments.

Comparative Analysis of Algorithms for Image Classification | *Python, Jupyter, Tensorflow* | Github

- Evaluated CNN architectures (AlexNet, VGGNet-19, ResNet) on CIFAR-10, CIFAR-100, and ImageNet datasets.
- Performed training, testing, and benchmarking to compare model accuracy, achieving up to 90% accuracy.