MUTHUKUMARAN ULAGANATHAN

ulaganathan.m@ufl.edu +13527095221 Gainesville,FL https://www.linkedin.com/in/muthukumaran-ulaganathan

SKILLS

Data engineering/technologies:Airflow, Kubernetes, Kafka, Docker, PySpark, Linux, DevOps lifecycle/practices, Blockchain, Web3

Programming Languages: Python, GoLang, Java, React.js, JavaScript, SQL, R programming

Frameworks: Springboot, Django, FastApi, Pytorch, GraphQl

Databases: Bigquery, Redshift, Snowflake, PostgreSQL, MYSQL, MongoDB, Redis

Cloud Platforms: AWS Cloud, Google Cloud Platform, Databricks

Machine Learning: Natural Language Processing, Computer Vision, SpaCy, CNN, RNN, LLM, Transformers

WORK EXPERIENCE

Software Developer - Data Engineer, Roni Analytics | PANDA Terminal (*September 2022 – August 2024)*

- Independently established a new AWS architecture with EMR on Kubernetes, Serverless, and EC2, including VPCs, gateway endpoints, and Nat gateway. Configured Databricks on GCP and implemented SCIM provisioning for cross-platform data operations.
- Implemented and ran optimized workloads on Airflow on AWS, reducing processing time by 85% through script optimizations and workflow enhancements.
- Developed and optimized ETL workflows using AWS Glue and Spark in Databricks, processing over 10TB of Ethereum and Bitcoin transaction data daily, reducing execution time by 25% and improving data pipeline reliability.
- Managed Postgres and MySQL databases, improving query performance by 40% through indexing and table partitioning; implemented fine-grained access control and migrated 1000+ tables between databases using AWS DMS with zero downtime.
- Created and deployed multiple LLM Streamlit applications, enhancing data visualization and user interaction for better decision-making and reduced report preparation time by 40 hours monthly through interactive analytics.
- Designed and implemented AWS auto-alert architecture using Lambda, CloudTrail, and CloudWatch, ensuring instant notifications for new EC2 instances, tagging S3 buckets, monitoring Glue job failures, and tracking user activity.
- Designed, developed, and deployed scalable Serverless REST APIs using AWS Lambda, API Gateway, JavaScript, and Node.js, ensuring high availability, optimized performance, and seamless integration with various backend services.

PROJECTS

Feedback-Driven-Resource-Controller-for-Kubernetes-Clusters

Designed and implemented an adaptive feedback-based controller for Kubernetes clusters, optimizing resource utilization for workloads with up to 30% oscillatory variability. Developed local and global controllers using PID control techniques, achieving consistent CPU utilization across 50+ nodes and pods under varying workloads.

GatorCan: E-Learning Platform

Developed a scalable full-stack learning platform that enables seamless course management, assignment submissions, and real-time collaboration. Leveraging Golang (Gin) for the backend, React.js for the frontend, and SQLite for initial data management, deployed the platform on AWS Cloud with the backend on ECS, the frontend on Amplify, AWS RDS for database scalability, and AWS S3 for efficient assignment storage.

Voice based virtual assistant using Deep Learning

Built a voice bot leveraging Natural Language Processing (NLP) and Deep Learning to enhance customer service efficiency, achieving a 95% intent recognition accuracy and a 30% reduction in customer query resolution time.

PUBLICATIONS

Enhanced Human Action Recognition with Ensembled DTW Loss Function in CNN LSTM Architecture

Springer 3rd International Conference on Sustainable Expert Systems (ICSES 2022)

The proposed algorithm involves refining HAR and provides precise decisions to predict any emergencies while overseeing elderly people. This algorithm uses Dynamic Time Warping as a loss function ensembled with mean absolute error in CNN LSTM neural network. Thus, it provides an accuracy of 75% for the data taken which is more than the accuracy produced by DTW or MAE as a separate loss function.

EDUCATION

Master of Science in Computer Science

University of Florida • FL, United States • 2026• 4 GPA

Bachelor of Technology in Computer Science

B. S. Abdur Rahman Crescent Institute of Science and Technology • India • 2022 • 3.46 GPA