Laxminarayana Vadnala

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Education

- **Saint Louis University** — St. Louis, MO
  *Masters - Computer Science; GPA: **3.87/4.00*** — *Aug 2023 - May 2025*
  Courses: *Computer Networks, Data Structures, Analysis Of Algorithms, Web Technologies, Machine Learning, Networking, Big Data*

Skills Summary

- **Languages**: Python, C++, JavaScript, SQL, Bash, Java (SE8)
- **Frameworks**: Apache Spark, Apache Arrow, Apache Airflow, Apache Kafka, Apache Hudi, Apache Hive, Apache Hadoop, ROS Noetic, ROS 2, FastAPI, Flask, NodeJS, TensorFlow, Keras, Pandas, ReactJS
- **Tools**: Kubernetes, Docker, GIT, PostgreSQL, Redis, Hadoop, Terraform
- **Platforms**: Linux, MacOS, Windows, Raspberry, AWS, GCP, Azure, Atlassian JIRA, Postman
- **Soft Skills**: Leadership, Event Management, Writing, Public Speaking, Time Management

Experience

- **Talent INC** — Remote
  Senior Software Engineer (Full-time) — *Sept 2022 - Feb 2024*
  - Successfully implemented a caching from scratch within the All APIs, which led to a remarkable 60% reduction in application costs. Caching eliminated redundant database queries for the same requests, directly impacting AWS billing.
  - Managed complete data engineering pipelines using Apache Airflow, Spark and Other AWS services from developing to deploying.
  - Authored more than 50000 lines of code, meticulously managed via GitHub, with work progress tracked through the JIRA dashboard.

- **Colgate-Palmolive** — Hyderabad, Telangana
  Solution Architect — *Jan 2023 - April 2023*
  - Authored and maintained more than 500,000 lines of Python code, pivotal in constructing data pipelines, REST APIs, and DAGs.
  - Implemented Slow Changing Dimensions (SCD) using the Data Build Tool (DBT), with a primary focus on the SCD-2 paradigm, as it aligns with our interest in tracking change patterns, which significantly influence the calculations.
  - Engineered all pipelines in batch processing mode, given that calculations rely heavily on Time Series Data Analysis.

- **Southwest Airlines** — Hyderabad, Telangana
  Solution Architect — *June 2022 - Dec 2022*
  - Authored over 1000 pyspark scripts to construct ETL pipelines, deploying them to EMR Steps and Glue jobs using GitHub Actions. I also designed and developed the CI/CD pipeline as the solution architect.
  - created a service for analysts using GPUs specifically we utilized RAPIDS Accelerator API which is part of Nvidia-CUDA-X, Using which we run the SQL computation over Nvidia GPU's.
  - Developed REST APIs using Fast API, a Python-based web framework, while implementing robust OAuth 2.0 authentication. The application was containerized and deployed on Kubernetes.
  - Successfully migrated approximately 12 Petabytes of data stored in a STAR Schema within the Redshift data warehouse. Data was optimized for cost savings through Gzip compression and stored in columnar formats like Parquet and ORC for expedited data retrieval. Compressed data footprint was reduced to around 4.7 Petabytes, leading to significant data storage cost savings.

- **Annalect (Omnicomm Media Group)** — Hyderabad, Telangana
  Data Developer — *Oct 2021 - June 2022*
  - Developed 25 Databricks jobs utilizing Apache Spark for efficient data ingestion into the staging area. These jobs handled diverse data types such as XML, Excel, CSV, JSON, Parquet, and more.
  - Designed and deployed Dockerized Airflow environments, hosted on Azure App Services, facilitating job scheduling and monitoring.
  - Orchestrated mail sending processes using the Azure Queue Storage service, allowing efficient queuing of messages for tracking, all of which were initiated by Airflow DAGs.
  - Developed a REST service for report generation, leveraging the Pymupdf module to dynamically generate PDF reports.

- Using transfer learning trained a VisualBERT model and RoBERTa model, while deploying these two models as a service for extracting text from handwritten papers, bills and more similar images.

- **Qualcomm India Pvt Ltd** Hyderabad, Telangana
  Senior Software Engineer *May 2020 - Sept 2021*
  - Developed the Mobile Testing Framework (MTFPy), entirely in Python, to streamline the testing process for newly manufactured Qualcomm mobile chips, including various checks such as 4G connectivity, VoLTE connectivity, and flight mode testing.
  - Reduced the test case execution time for a single chip from 29 minutes and 32 seconds to just 2 minutes and 26 seconds, executing all 492 test cases.
  - Authored and managed approximately 600,000 lines of Python code.
  - Led a team of 4 junior developers and conducted rigorous code reviews.
  - Implemented design patterns and optimized code execution using advanced search and sorting techniques.

- **Intellect Design Arena Pvt Ltd** Hyderabad, Telangana
  Senior Software Engineer *Oct 2019 - May 2020*
  - Developed a PDF parsing tool using OCR which have table parsing capabilities using python and OpenCV.
  - Worked on NLP model building where it summarizes, and extract NER tags designed while training the model based on the content extracted from PDF.
  - Exposed this work as REST API service using Fast API or Flask Restful framework, where this is managed using JIRA and collaborated with team using GitHub.
  - As a Big Data Engineer, responsible for weighing check list automation pipeline. Aircraft is sale will hit this pipeline where this spark job will perform ELT over the data and save in respective database tables.
  - Received GEM award for receiving the appreciation from Airbus. Deployed spark job using Jenkins's pipeline, where we ever we get a hit request we update the pipeline and trigger the build with data path and required inputs given while building.

Projects

- **Safety Aware Drone Ecosystem's Back end and Front end (SADE)**
  SLU Graduate Research Assistant *Jul 2024 - Present*
  - Implemented the whole back end from scratch with MQTT and Database integration to facilitate the transfer of drone configuration configured by user to SADE simulation stack which comprises of PX4, Gazebo and Unreal Game Engine to enable simulation.
  - Optimized the existing front end to support real time changes from user for butter smooth experience. Also integrated Cesium JS components to enable Google Maps 3D tiles for precise location configuration for better user experience.
  - Worked with Tech Stack Python, Fast API, Mosquitto MQTT, Mongo DB, Docker, GitHub Actions, React JS, Cesium JS, Docker Compose

- **SADE Simulation Plugins**
  SLU Graduate Research Assistant *Jul 2024 - Present*
  - Developed and Managing the Gazebo physics engine plugins like Real time Terrain Loaders when drone fly using the terrain information from the 3D tiles of Cesium for simulating precise taking off, landing, obstacles for real time collision and more physics operation
  - improvised the existing wind plugin from PX4 Gazebo as per the SADE project requirements in real time while applying the continuous wind force on the simulated drones in simulation.
  - Developed a Drone Pose sender (Gazebo Plugin) and Receiver (CLI tool) which basically sends the Pose of Drone from gazebo in real time as UDP packets and Pose Receiver will be receiving the UDP packets in real time. This includes real time Endian encoding and decoding.
  - Worked with Tech Stack C++ 11, SDF, Gazebo 11 C++ library, ROS Noetic, Linux Bash Scripts

- **SADE Workflow Management**
  SLU Graduate Research Assistant *Jul 2024 - Present*
  - Developed the workflow management system for integrating and scaling of Unreal Engine Pods, Unreal Pixel Streaming Pods, GUI and Back end Pods, PX4 Auto Pilot Pods and Gazebo Pods.
  - Unreal Engine Pods share the GPU resources, we achieved this using NVIDIA Container toolkit, and streaming the display over network via Pixel Streaming to Front end.
  - Worked with Tech Stack Python, Shell Script, Docker, Docker compose

Honors and Awards

- Rise and Shine Award from Annalect India - Feb 2022
- On Spot Award from Annalect India - May 2022