JAISHANKAR MOHANRAJ

(782) 882-1644 jaishankar.mohanraj@gmail.com linkedin github

Toronto, ON

SKILLS

Languages: Python, SQL, Java, JavaScript, C/C++

Libraries/Frameworks: Scikit-learn, TensorFlow, PyTorch, Pandas, NumPy, ReactJS, Django, ChartJS

Data Platforms: MS SQL server, InfluxQl, Hadoop, Apache Spark

Dashboarding and Visualization: Power BI, Metabase, Excel, Plotly, GeoPandas

Cloud and DevOps: Azure, AWS, GCP, Docker, Git, MQTT

Engineering and Analytics: Root Cause Analysis, Reliability Modeling, Inventory and Supply Chain Analysis

EXPERIENCE

Machine Learning Intern — Jan 2025 – May 2025

DeepSense

- Conducted **root-cause analysis** of sensor data loss in marine systems, contributing to reliability modeling for automated trawl nets.
- Implemented an **ETL pipeline** using **Pandas** to extract data from different sensor logs, perform data cleaning and transformation, and load the results into a combined dataframe for downstream analysis in **Azure Cloud**.
- Engineered an **Excel Based dashboard** integrating 7 key model performance metrics, which enabled rapid A/B testing of parameter configurations and increased model selection efficiency by 15%
- Developed and benchmarked **predictive models** using Scikit-learn and XGBoost to detect sensor anomalies, improving early fault detection accuracy by 18%.

Data Analyst Intern — May 2023 – Aug 2023

FYN Mobility

- Visualized **real-time** driver activity metrics with **SQL Server**, enhancing operational visibility and driving a 40% increase in customer satisfaction.
- Implemented a **real-time IoT** vehicle tracking solution with **OpenStreetMap, Django and Mosquitto MQTT server**, reducing post-failure vehicle recovery time by 35%.
- Designed and deployed a Battery State of Charge calculator using **InfluxQL** to enable the control center to monitor the Hero NYX battery's expected range from voltage data, resulting in a 30% reduction in dead battery incidents during operations.
- Assessed **data quality** across real-time telemetry streams, implementing validation logic that reduced false alerts by 20%.

Power Train Engineer — Jan 2022 – Aug 2023

Team Haya Racing

- Led a team of five in designing, manufacturing, and assembling the **powertrain system for a Formula Student race car**, applying principles of thermodynamics, kinematics, and mechanical design.
- Conducted **failure mode and effects analysis (FMEA)** on drivetrain components to improve reliability and reduce breakdown risk during endurance testing.
- Performed **stress and fatigue analysis** on gear assemblies using SolidWorks Simulation, contributing to a 20% improvement in component lifespan.
- Collaborated cross-functionally with chassis, vehicle dynamics, and electronics teams to align powertrain development with overall team goals through **weekly scrum meetings**.

Data Science Intern — May 2022 – Aug 2022

Ciera Technologies

- Built a **Power BI dashboard** to track inventory levels and procurement cycles, improving visibility and replenishment planning by 12%.
- Migrated **legacy procurement data** to **Hadoop warehouse via Apache Spark ETL pipelines**, reducing data retrieval times by 15% for forecasting and reporting.
- Conducted time-series analysis on procurement cycles to identify seasonal demand patterns, enabling more accurate forecasting and reducing stockouts by 12%.
- Identified procurement risk factors using **decision tree modeling**, enabling proactive vendor selection and cost mitigation.

EDUCATION

Dalhousie University **Jan 2024 – May 2025**

Master of Applied Computer Science

- Courses: Process of Data Science, Data Management and Warehousing, Software Development, Serverless Data Processing, Cloud Computing, Communicating Computer Science Ideas.

PES University **Aug 2019 – Jul 2023**

Bachelor of Mechanical Engineering – Minors in Computer Science

- Courses: Database Management Systems, Data Structures and Algorithms, Operating Systems, Product development, Mechatronics, Industrial IoT, Introduction to Data Science, Control Engineering, Machine learning and artificial intelligence.
- Research publication: M. Shravann, D. Ranjan, J. Mohanraj, D. Kakde, and B. Supriya, "Study of Friction Stir Processing on Al2219 Alloy, Surface Fabricated with B4C and Graphite Particulates," Recent Advances in Materials and Manufacturing, pp. 169–179, DOI: 10.1007/978-981-97-3654-6 18.

PROJECTS

Race Visualizer Using AWS Cloud **Python | React.js | NoSQL DB | AWS Cloud**

- Built a Python-based telemetry ETL pipeline to scrape real-time data from Assetto Corsa and publish it to AWS IoT using MQTT at 2 records/sec.
- Automated IoT device provisioning, email notifications, and NoSQL data ingestion (100 records/sec) using the AWS SDK, aligning with the 6 pillars of the AWS Well-Architected Framework.
- Constructed a responsive race data dashboard with React.js and Chart.js, enabling live updates of 15+ sensor data points

Predictor Models for MotorSport **Python | Plotly**

- Built a Python-based analytics dashboard from scratch to process 50K+ performance data points across 2010–2024 Formula One seasons.
- Developed machine learning models (Isolation Forest, XGBoost) that improved time-series prediction accuracy by 25%, demonstrating strong forecasting and modeling skills.
- Designed interactive visualizations to evaluate strategy efficiency and performance trends, delivering insights that aligned with 90%+ of real-world outcomes.

Bus Stop Optimizer **Python | Pandas | K-means | GeoPandas**

- Developed an optimization model for bus stop placement across New York City using the 2014 Taxi Details dataset (84.5M records), aiming to reduce traffic congestion through data-driven planning.
- Visualized taxi pickup and drop-off points using GeoPandas and Contextily, and performed statistical subsampling to retain 95% data coverage while improving processing efficiency.
- Applied K-Means clustering to identify optimal bus stop locations and estimated a potential 15% traffic reduction in downtown Manhattan using congestion analysis metrics.

Price predictor for E-commerce **Python | Pandas | Scikit-learn**

- Built a pricing prediction model to forecast electronic goods prices throughout the year using Datafiniti's 140,900-record dataset, based on supply chain dynamics across major retailers.
- Conducted in-depth data analysis to identify patterns influenced by different business roles within the supply chain, and trained models including Random Forest, XGBoost, MLP, and Decision Tree, achieving a best-performing R^2 score of 0.91.
- Improved model efficiency by reducing training time by 35% through cost-performance analysis tailored to the business use case.

Full Stack Web Application **Spring Boot | React.js | MySQL DB**

- Collaborated in a team of 5 to develop a full-stack web application using React.js and Spring Boot, enabling direct farmer-to-consumer connections.
- Designed RESTful APIs and integrated Google Maps API to display the 8 closest farms based on user input, improving user engagement and accessibility.
- Implemented a CI/CD pipeline with GitLab Runners and achieved 82% test coverage through unit and integration testing.

DalVacation home **AWS | GCP | React.js | Python**

- Designed a multi-cloud, service-oriented architecture leveraging AWS and GCP to enhance scalability and resilience.
- Developed Comprehensive payment and booking system using stripe, lambda functions and AWS aurora.
- Wrote serverless functions to orchestrate a microservice backend, and deployed a CI/CD pipeline for the frontend using GCP Cloud Build, Cloud Run, Docker, and GitHub triggers.