Rajesh Rajendran

Data Scientist

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About me

- Constructed scalable, high-performance, robust data solutions to derive insights from large and complex datasets.
- Versatile in working with a wide range of technologies and adept at managing complex tasks.
- I am technically proficient and believe the use of technology to solve the business problems. I thrive on challenges and motivated to find innovative solutions.
- Acted as a liaison between stakeholders and technical teams.
- Successfully recruited and built high-performing teams.
- Mentored team members in learning new tools and enhancing existing processes.

Experience

Jun 2022 – Present
Data Scientist — Alstom Transport

- Developed **Root Cause analysis** solution utilizing tools from causality on service affecting failures in Urban Transit Systems. Performed **Causal Discovery** to determine the relationship between variables and failures. Created a **Causal Bayesian Network** model and exploited the model to derive **Interventional and Counterfactual** insights about the root causes of failure. Developed and deployed web application to share results with stakeholders.
  Stack: *Python, causal-learn, causalens, pyArgum, plotly, matplotlib, streamlit, gravis*
- Developed anomaly detection algorithm using **Autoencoder** to identify anomalies in sensor measurements.
  Stack*: Python, Tensorflow, Keras, Numpy*
- Developed **analytical application** for deriving insights from datalogs collected from onboard signalling system. Developed data processing modules for computing complex KPIs on huge volume data with **Big-Data** technology. Developed **analytical dashboards** and automated end-to-end data pipeline with **Apache Airflow**.
  Stack: *Scala, Spark, Minio, Apache Airflow, Postgres, Azure dev-ops, Git, Python, Kubernetes, PowerBI*
- Developed a **statistical algorithm** to identify trains in the fleet that needs **immediate maintenance** from the event datalogs generated by train. Algorithm is packaged and **deployed in Alstom's Fleet management system**.
  Stack*: Python, pyinstaller, Numpy, Pandas*

May 2021 – Dec 2023
Data Engineer — Alstom Transport

- Designed and implemented **robust data pipelines** for data injection, data processing and prediction for different data science applications. Incorporate **data quality checks** into each stage of the data pipeline. Deployed data engineering functions as **REST API services**.
- **Optimized data processing** tasks leveraging the Python **MultiProcessing** libraries. **Improved processing speed by 10 times**.
- Developed POC for using numpy arrays and python list as **Pandas alternative for data wrangling** tasks for large volumes of data. **Reduced processing time by 85%.**
- **Optimized PostGres** query performance by addressing **inefficiencies in database design**.
  Stack*: Python, Azure-devops, Git, Docker, Kubernetes, Flask, shell script, Scala, Spark, Postgres*

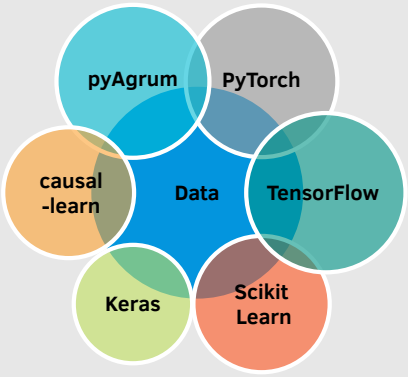
Sep 2015 – Jul 2021
Software Desinger — Alstom Transport

- Designed and developed **simulators for Factory Acceptance Testing of Railway Signalling equipment**.
- Developed **track plan creation tool** that allows **users across globe to collaborate in track plan design and create animations**.
  Stack*: .Net, MFC, IPC*

Jul 2014 – Jul 2015
Product Engineering Trainee — Blue Triangle Innovations

Dec 2012 – Jun 2014
Student Researcher — German Aerospace Research Center (DLR)

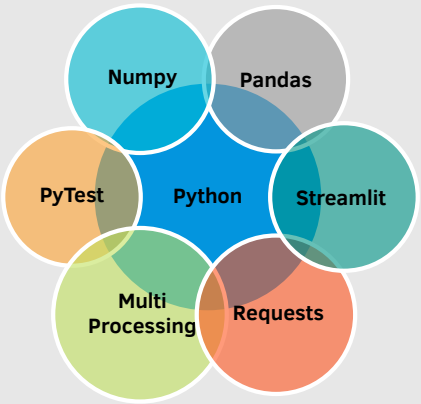
ML Libraries



Programming Skills

- Python • LateX • Markdown
- Linux • SQL • Docker • Git
- MS Office • Kubernetes • DevOps
- Azure • Airflow • Scala

Python Libraries



Languages

English (Native Language)

Tamil (Mother Tongue)

Kannada (Mother Tongue)

German (B1 - Intermediate)

Education

2010 Oct – 2013 Dec **M.Sc in Process Automation** Technical University of Dortmund, Germany

2006 Jul – 2010 Apr **B.E in Electronics & Instrumentation** MIT, Anna University

Achievements

Jun 2024 **Industrial-Grade Time-Dependent Counterfactual Root Cause Analysis through the Unanticipated Point of Incipient Failure**

- Paper submitted for **"Causal Inference for time-series"** conference.
- Developed a **Causal Bayesian Network** model based on synthetic data and knowledge graph. Performed **Counterfactual analysis** and proved root causes are found at the Point of Incipient failure.

May 2024 **Certification on Foundations of Causality** causaLens

- Causalens is the leader in causal technology space. This course offered fundamental knowledge and skills for causal AI.

Mar 2024 **World Class Expert** Alstom Transport

- Recognized as World Class Expert in developing data solutions.

Jun 2023 **Mathematics for ML and DS** DeepLearning.Ai

- The course covered, core mathematics for machine learning and data science, including linear algebra, calculus, probability, and statistics

Aug 2022 **Data Science Specialization** Johns Hopkins University

- The Data Science Specialization covers the concepts and tools for an entire data science pipeline.
- Learned to use the tools, think analytically about complex problems, manage large data sets, deploy statistical principles, create visualizations, build and evaluate machine learning algorithms, publish reproducible analyses, and develop data products