

Sarath Tharayil Sreenivasan

Sheffield | P: +44 7533886825 | iamsaraththarayil@gmail.com | [linkedin.com/in/SarathTharayil](https://www.linkedin.com/in/SarathTharayil) | saraththarayil.com

SUMMARY

Experienced Data Scientist with over 3 years of expertise delivering high-impact ML solutions for Fortune 500 companies across diverse domains. Demonstrated track record of architecting and deploying production-scale AI systems that generated \$10M+ in business value. Proficient in Python, deep learning frameworks, and cloud-based ML pipelines, with a strong focus on translating complex data into actionable insights. Led cross-functional teams to transform complex business challenges into scalable ML solutions

EXPERIENCE

MuSigma

Bengaluru, India

Senior Data Scientist

January 2022 – September 2022

- **Led the end-to-end development** of a **scalable data engineering pipeline**, orchestrating **1,000+ API calls daily** for real-time data collection from global energy and commodity markets. Automated data ingestion and transformation using **PySpark and Apache Hive**, deployed workflows via **Airflow**, and managed infrastructure with **Terraform** on **AWS EC2**.
- **Developed ensemble forecasting models** combining ARIMA and LSTM networks, leveraging **TensorFlow, Keras, and Scikit-learn** to achieve 87% accuracy in price and demand forecasting. Deployed models as **containerized microservices using Docker** and orchestrated them with **Kubernetes** for scalable inference on **AWS and GCP**.
- **Implemented advanced anomaly detection** using Isolation Forests and Autoencoders within **RapidMiner AI Hub**, reducing data anomalies by **65%**. Deployed the anomaly detection system on **AWS Lambda**, enabling real-time fraud detection with event-driven architecture.
- Designed a novel feature engineering framework utilizing **wavelet transforms and fourier analysis** to extract complex temporal patterns from energy market data, improving forecast accuracy by **17%**. Automated feature selection pipelines using **Scikit-learn and Pandas** and deployed them as part of a larger **MLOps workflow on AWS**.
- **Developed interactive and actionable Tableau dashboards** for price and demand forecasts, integrating **Flask APIs** for real-time updates. Connected to **AWS Redshift** for scalable data storage and optimized queries with **SQL and Pandas** to enable faster insights.
- Actively participated in user testing and iterative improvements, leveraging **Git** for version control, **Docker** for environment consistency, and **terraform** for cloud infrastructure provisioning. Enhanced dashboard usability through continuous feedback loops, ensuring seamless adoption across business teams.

MuSigma

Bengaluru, India

Data Scientist

January 2021 – January 2022

- Built a scalable **machine learning pipeline** using **Python** and **PySpark** to **identify root causes** of supply chain disruptions, **reducing daily product shortages** by **38%**, preventing losses **worth \$1.5M** per day. (Tech Stack: Python, PySpark, Scikit-learn, XGBoost, Airflow, AWS S3)
- Developed a Bayesian Structural Time Series (BSTS) model for **Market-Mix Modeling (MMM)**, **optimizing** marketing spend across multiple channels, **increasing ROI** by 16% in the Mexican market. (Tech Stack: R, TensorFlow Probability, PyMC3, Prophet, Matplotlib)
- Created a custom loss function incorporating business constraints for MMM models, leading to more **actionable marketing spend recommendations**. (Tech Stack: R, PyTorch, TensorFlow, NumPy)
- Designed and implemented a reinforcement learning algorithm to **dynamically adjust inventory levels** based on real-time demand signals, reducing stockouts by 25%. (Tech Stack: Python, OpenAI Gym, TensorFlow, Pandas, SciPy)
- Quantified **media effectiveness** through statistical analyses, leveraging **R-based predictive models** to optimize marketing allocations across portfolios. (Tech Stack: R, ggplot2, dplyr, Tidyverse, KNIME)
- Developed an interactive **RShiny simulator** for Market-Mix Modeling, allowing business users to test different **spending strategies**, leading to a 16% increase in incremental revenue. (Tech Stack: R, RShiny, ggplot2, Plotly, Flask APIs)

MuSigma

Bengaluru, India

Data Sciences Intern

January 2021 – January 2022

- Built a multi-armed bandit algorithm for A/B testing in **digital marketing campaigns**, **increasing click-through rates** by 19% over traditional methods. (Tech Stack: Python, TensorFlow, OpenAI Gym, Scikit-learn)
- Created custom regularization techniques for neural networks to **handle imbalanced datasets** in **pharmaceutical trial analysis**, improving model generalization and robustness. (Tech Stack: TensorFlow, Keras, PyTorch, NumPy, Pandas)
- Produced persuasive **sales pitch decks** for multiple projects, effectively articulating complex problem-solving approaches and innovative AI solutions to stakeholders. (Tech Stack: PowerPoint, Canva, Tableau, Google Slides)

SKILLS

Machine Learning: Deep Learning, Transfer Learning, Reinforcement Learning, GANs, Attention Mechanisms; Advanced Analytics: Time Series Analysis, Bayesian Modeling, Causal Inference, Graph Neural Networks; Programming: Python, R, Java, C++; Data Science and Analytics: RapidMiner, KNIME, SPSS, Keras; ML Frameworks: TensorFlow, PyTorch, Keras, Scikit-learn; Big Data:

Spark, Hadoop, Hive, Presto SQL; Cloud Platforms: AWS, Azure, Google Cloud; Data Visualization: PowerBI, Tableau, Matplotlib, Seaborn; MLOps: Docker, Kubernetes, MLflow; Other: Linux, RESTful APIs, Agile methodologies;

EDUCATION

THE UNIVERSITY OF SHEFFIELD
Master of Science, Major in Data Science

Sheffield, United Kingdom
January 2024

- Dissertation: Falsification and Fabrication: Classifying GAN-generated Faces
- Modules: Intro to Data Science, Data Mining, Big Data Analytics, Business Intelligence, Database Design, Data Analysis, Data Visualization, Data and Ethics

COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY
Bachelor of Technology, Major in Computer Science Engineering

Kochi, India
July 2020

- First Class; Cumulative GPA: 7.8/10
- Modules: Data Structures and Algorithms, Database Management Systems, Data Mining, Artificial Intelligence, Artificial Neural Networks, Big Data Analytics, Distributed Computing, Logic Design, Discrete Computational Structures, Computer Networks, Computer Architecture and Organization, Cryptography and Network Security, Automata Languages and Computations, Compiler Construction, Advanced Microprocessors and Microcontrollers, Advanced Architecture and Parallel Processing.

PROJECTS

Adversarial Exploits: Classification of AI-generated human faces (Dissertation)

August 2023

- Developed a novel architecture combining CNNs and Transformer networks for robust classification of AI-generated faces, achieving 99% accuracy on challenging datasets.
- Implemented advanced data augmentation techniques, including style transfer and progressive growing of GANs, to enhance model generalization.
- Designed a self-supervised pretraining approach using contrastive learning, reducing the need for large, labeled datasets and improving model performance by 15%.

Analysis of DDoS infected IoT Devices using multiple machine learning classifiers

June 2020

- Implemented an ensemble of gradient-boosted decision trees, support vector machines, and deep neural networks for DDoS attack detection, achieving 98% F1-score.
- Developed a novel feature extraction technique using graph neural networks to capture complex network topology patterns, improving detection accuracy by 10%.

Predicting Song Popularity using Regression models: Comparative Analysis

February 2023

- Engineered a multi-modal deep learning model combining convolutional neural networks for audio processing and LSTM networks for lyric analysis, outperforming traditional regression models by 30% in popularity prediction.
- Implemented a custom attention mechanism to identify key audio and lyrical features contributing to song popularity, providing interpretable insights for music producers.