SARATH RAHUL MALLA

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PROFESSIONAL SUMMARY

Adept Data scientist skilled in translating data into tangible business value by analyzing information, communicating outcomes and collaborating in product development. Proficient in Machine Learning, Deep Learning and generative AI. Experienced in crafting and implementation of data pipelines, data normalisation, reporting, analysis of data science solutions. Proven history of delivering impactful data science projects within research and commercial settings.

AREAS OF EXPERTISE

- Machine Learning
- Deep Learning
- Data Science
- Large Language Models
- Generative AI
- Natural Language Processing
- RDBMS
- SQL
- Automation
- Statistical Modelling
- Reinforcement Learning
- Feature Engineering

EXPERIENCE

Junior Data Scientist (Intern) June 2023 - July 2023
University of Edinburgh, Edinburgh, UK
Joined university's research and development team, contributing to the development of fine tuned Large Language Models (LLM) and deep learning simulation frameworks. Demonstrated proficiency in optimizing and fine tuning LLMs and Deep learning models for enhanced performance.

- Orchestrated the development and fine-tuning of a Generative Pre-trained Transformer (GPT), an Auto regressor Large language model boasting 120 million parameters, meticulously trained on a vast 2.4 billion tokens corpus of medical data, resulting in an impressive cross entropy loss reduction to 0.45 .
- Employed advanced regularization techniques and Parametric Efficient Fine-Tuning, achieving a remarkable 20% improvement in model performance by effectively addressing catastrophic forgetting challenges.
- Led the development of a Graph Network-based Simulators (GNS) framework, inspired by Google DeepMind's 'Learning to Simulate' project, achieving exceptional 94.92% accuracy in predicting material behavior across diverse conditions and extended timeframes, even with 10 times more particles.
- Improved long-term performance by optimizing the number of message-passing steps, reducing simulation error by 36%, and introducing noise during training for a 2.4% stability enhancement.
- Led Multi-objective Bayesian optimization project, optimizing crucial variables to enhance the understanding of Liver functionality, resulting in a remarkable 62% reduction in runtime compared to traditional approaches.

Tutor and Demonstrator (Machine Learning Practical) Oct 2022 - Aug 2023
University of Edinburgh, Edinburgh, UK
Actively engaged in development and deployment of 20+ hands-on large scale projects across diverse domains such as Finance, Healthcare and Natural Language Processing, fostering a collaborative learning environment.

- Fine-tuned the BART model using an Instruction based prompt dataset to succinctly summarize study lectures, resulting in a remarkable 90% reduction in the time students need for reviewing lecture content.

Programmer Analyst Feb 2021- Aug 2022
Cognizant Technology Solutions, Chennai, India

- Applied unsupervised machine learning techniques like clustering, anomaly detection to analyze large and complex financial data, revealing complex relationships, insights, key trends, and patterns.
- Implemented performance tuning techniques such as indexing and query optimization to improve speed and efficiency of SQL queries, resulting in 30% reduction in query execution time.
- Led the loading of metadata and data validations for multiple projects, resulting in the successful deployment of 10+ enterprise-level applications with no data-related issues reported.
- Collaborated in multidisciplinary teams, regularly communicating key findings to our business partners and stakeholders through the use of analytical tools like SAS.

EDUCATION

MSc in Data Science, University of Edinburgh 2022 - 2023
Modules: Machine Learning, Database Systems, Natural Language Processing and Incomplete Data Analysis.
Incorporated experience in leadership, governance, and change enablement during tenure as Leader for InfPals Society.

B.Tech in Mechanical Engineering, ANITS 2016 - 2020
CGPA: 8.36/10
Publications : Optimization of Cutting Parameters in CNC Turning Machine using ANOVA technique in TAGUCHI method.

DATA SCIENCE PROJECTS

Unsupervised Learning Trading Strategy with S&P 500 Stocks
Explored S&P 500 stocks data to develop an unsupervised learning trading strategy focusing on mastering features, indicators, and portfolio optimization.

- Successfully identified key features leading to a 23% reduction in feature redundancy within the S&P 500 dataset.
- Indicators Optimization: Improved trading strategy performance by 18% through effective integration and optimization of technical indicators.

Electrocardiogram(ECG) Abnormality Detection Using LSTM Neural Network

- Spearheaded the development and deployment of an LSTM (Long Short-Term Memory) neural network to detect cardiac abnormalities in Electronic Health records (ECG signals). Employed medical statistics to understand the patterns in ECG signals.
- Achieved an impressive accuracy of 97.8% in detecting ECG abnormalities, surpassing the industry-standard mean absolute loss threshold of 0.26, where anything above this threshold is considered abnormal.

Machine Learning - Heart Stroke Prediction Classifier

- Spearheaded the development of a groundbreaking heart stroke prediction classifier, achieving an exceptional accuracy of 100% (Cross-validation) and an impressively low False Negative rate of 0 on test data.
- Leveraged cutting-edge technologies and algorithms, including Ensemble techniques like Bagging (XGBoost) and Boosting (Random Forests), to create a robust and high-performing model.
- Utilized state-of-the-art data preprocessing techniques to handle complex medical data, ensuring seamless integration with the model and reducing data noise by 30%.

Dynamic Video Recommendation System for Web Content using Pyspark

- Employed ETL and developed a dynamic video recommendation system based on Content based filtering leveraging advanced techniques in Natural Language Processing (NLP) like Word2Vec, Bag of n-grams to enhance user engagement on a web-based video content platform.
- Implemented web scraping automation for bi-monthly video data refresh, applied NLP algorithms for semantic analysis of titles and tags, and integrated user-friendly custom filters for personalized content recommendations.

TECHNICAL SKILLS

Python Libraries	Numpy, Pandas, Scikit-Learn, PyTorch, Tensorflow, Hugging Face, PySpark, SciPy,
Languages	Python, R, SQL (SparkSQL, MySQL & Postgres), MATLAB, C, Java.
Tools	SAS, Tableau, PowerBI, Jupyter Notebook, Excel, Git, Docker.
Cloud Computing	Amazon Web Services (AWS), Azure Cloud.

ACHIEVEMENTS AND CERTIFICATIONS

- Certificate in Gesture Controlled Maze Workshop, Shaastra 2019, IIT Madras
- International Rank 81 in International Mathematics Olympiad conducted by SOF, 2012
- Software development certification from JP Morgan Chase and Co.
- Generative AI using LLM and Data Analytics professional certificate offered by Google through Coursera.