

**PREYANK BHAVESH MOTA**Course : **M.Sc. (Hons.)**, Mathematics and **B.E. (Hons.)**, Computer Science, 2024

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CGPA : 8.51

**Subjects / Electives**

Artificial Intelligence, Applied Stochastic Process, Operating Systems, Database Systems, Computer Networks, Cryptography, Operation Research, Microprocessors and Interfacing, Data Structure and Algorithms, Database Systems, Object Oriented Programming, Applied Statistical Methods, Computer Architecture, Graphs and Networks, Cryptography, Data Structure and Algorithms

Technical Proficiency

Node.js, MATLAB, C Programming, Distributed Systems, Python3, AWS CloudFormation, Raspberry Pi, C++, Java, AWS Lambda, Shell Scripting, Deep Learning

SUMMER INTERNSHIP / WORK EXPERIENCE**Software Development Engineer Intern, Amazon****Jul 2023 - Dec 2023***Project 1: Data Ingestion Pipeline Enhancement*

Managed the implementation of a robust data ingestion pipeline utilizing AWS Lambda functions, Step Functions, and DynamoDB. Developed a sophisticated cache lookup mechanism within DynamoDB to prevent duplicate data ingestion, resulting in streamlined data processing. Played a pivotal role in the deprecation of a key service, leading to substantial cost savings of approximately \$400k in Infrastructure Maintenance and Reliability (IMR) expenses.

Project 2: Dependency Decoupling

Led the strategic planning and implementation aimed at untangling service dependencies while upholding the existing p99 latency standards. Orchestrating a comprehensive roadmap for separating a service from its interconnected counterpart, while evaluating and mitigating potential latency ramifications. Collaborating seamlessly with key stakeholders to ensure uninterrupted service and a seamless end-user experience, and accomplished a total throughput of 15,000 TPS with a p99 latency of 7ms.

ML Intern, Hertztech Solutions Pvt. Ltd.**Jun 2021 - Jul 2021**

Generative model for Time Series Signal using the Wavenet Model. Create and train a Wavenet model to detect anomalies in mechanical and electronic machines using their vibrations and raw audio. Benchmarking this model using various input data formats and thus optimising the model performance for the use case by 40% (using MIDI audio format).

PROJECTS**ConcurSSH - Systems****Jun 2023 - Present**

A simple tool scripted in C, that allows to execute a script on multiple remote hosts concurrently using SSH. It provides the ability to execute commands in parallel (using threads), handle password-based and passwordless SSH authentication, handle output and error logging, and implement a timeout mechanism.

Anomaly Detection using Deep Learning - Deep Learning**May 2022 - Jul 2022**

For a given labelled dataset, identifying anomalies in the data. Used different models and achieved the highest precision score of 0.78 using Autoencoder model on the dataset by testing the model on 30% of the data while training on 70% data over 50 epochs

Hyperparameter Tuning and Optimisation App - Machine Learning**Mar 2022 - Jun 2022**

An app to use Random Forest Regressor on datasets to optimise the hyperparameter values for the said dataset. The app is made using streamlit library and hosted on the streamlit website. It allows to upload any dataset the user wants.

Forecasting stock prices using ARIMA model - Forecasting Models**Sep 2021 - Nov 2021**

Predicting stock prices of different securities portfolios using ARIMA model after finding optimal parameters to fit the existing data and matching the prediction with actual data by splitting data into train and test. These prediction were within a range of 20% error from the true values.

PUBLICATIONS**quantile-LSTM: A Robust LSTM for Anomaly Detection in Time Series Data** **Journal name: IEEE TAI | Publication date: Jan 12, 2024**

In this paper, we make two contributions: 1) we estimate conditional quantiles in the popular Long Short Term Memory networks (LSTM) architecture, propose a novel anomaly detection method, qLSTM, and consider three different ways to define anomalies based on the estimated quantiles. 2) we use a new learnable activation function (AF), Parametric Elliot Function (PEF), in qLSTM architecture to model temporal long-range dependency. Unlike sigmoid and tanh, the derivative of the PEF depends on the input as well as on the parameter, which help in mitigating the vanishing gradient problem and therefore facilitates in escaping early saturation.