**PROJECT SYNOPSIS**

**Project Title: STOCK PRICE ANALYSIS AND PREDICTION**

**Introduction:**  
In today's financial markets, the ability to predict stock price movements is highly valuable. This project focuses on analyzing and forecasting stock prices for major tech companies, including Apple (AAPL), Google (GOOG), Microsoft (MSFT), and Amazon (AMZN). Utilizing historical stock data, the project employs various statistical and machine learning techniques such as moving averages, daily return analysis, and an LSTM (Long Short-Term Memory) model to predict future stock prices. The project also explores relationships between stocks through correlation analysis and evaluates the risk-return profile of each stock, providing valuable insights for investors.

**Objectives:**

1. To perform exploratory data analysis (EDA) on historical stock prices of AAPL, GOOG, MSFT, and AMZN.
2. To calculate moving averages and analyze daily returns for each stock.
3. To visualize stock price trends and identify patterns using advanced plotting techniques.
4. To build an LSTM-based model for predicting future stock prices based on past performance.
5. To assess the performance of the LSTM model using RMSE and compare predictions with actual stock prices.
6. To evaluate the correlation between the stock prices of the selected companies.
7. To analyze the risk-return tradeoff for the selected stocks using statistical techniques.