***Microsoft stock price prediction: time series analysis for stock market trends***

***Abstract-***

**Predicting future stock volatility has always been a demanding chore for research studies. Individuals around the world have long regarded the stock market as a substantial**

**profit. A stock data set contains numerous precise terms that are difficult for an individual to comprehend when considering stock market expenditures. An essential manifestation of a stock’s performance on the stock market is its closing price, but it is challenging to estimate the stock market’s price movements. This study aims to provide a future market scenario supported**

**by statistical data. We used the Microsoft Corporation Stock Dateset from 1986 to 2022.**

**To foresee stock market volatility, we used time series analysis with the Long Short-Term Memory (LSTM), Bidirectional Long-short Term Memory (Bi-LSTM), Auto regressive Integrated Moving Average (ARIMA), Hidden Markov Model (HMM), and Multi-Head Attention. We have achieved 0.153, 0.202, 6.674, 14.760, and 21.493 for Transformer,**

**HMM, ARIMA, Bi-LSTM, and LSTM respectively.**