

# **VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

“Jnana Sangama” Belagavi – 590 010



## **PROJECT REPORT ON “FORECASTING FINANCIAL FORTUNES: INTEGRATING ARIMA, LSTM, AND LINEAR REGRESSION FOR STOCK MARKET PREDICTION”**

Submitted in partial fulfillment of the requirements for the award of degree

**BACHELOR OF ENGINEERING IN  
ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING**

Submitted By

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**DEPARMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING**



**ALVA'S**  
Education Foundation

**ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY**

(Unit of Alva's Education Foundation (R), Moodbidri)

Affiliated to Visvesvaraya Technological University, Belagavi &

Approved by AICTE, New Delhi. Recognized by Government of Karnataka.

**Accredited by NAAC with A+ Grade**

Shobhavana Campus, MIJAR-574225, Moodbidri, D.K., Karnataka

2023-2024

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## DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

### CERTIFICATE

This is to certify that the project work entitled **"FORECASTING FINANCIAL FORTUNES: INTEGRATING ARIMA, LSTM, AND LINEAR REGRESSION FOR STOCK MARKET PREDICTION"** has been successfully completed by

ARAV HANSHIK

4AL20AI005

MALINI K A

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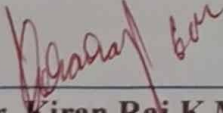
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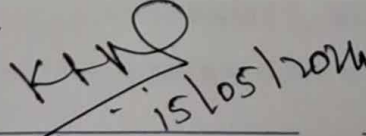
SOUPARNIKA U S

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the bonafide students of **Department of Artificial Intelligence & Machine Learning, Alva's Institute of Engineering and Technology** in partial fulfillment for the award of **BACHELOR OF ENGINEERING** in **DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING** of the **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI** during the year 2023-2024. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

  
Mr. Kiran Raj K M

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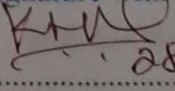
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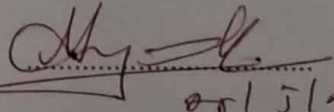
Name of the Examiners

1. Harish Kunder

2. Henry Umashankar

Signature with date

  
28/05/2024

  
28/05/2024

## ABSTRACT

This paper explores the effectiveness of three distinct models—autoregressive integrated moving average (ARIMA), long short-term memory (LSTM) networks, and linear regression—in predicting stock prices. While each model possesses its own set of advantages and drawbacks, the study aims to compare their performance by analyzing their underlying principles and predictive outcomes. Notably, the LSTM model exhibits promising predictive capabilities, albeit being susceptible to data processing nuances. In contrast, the ARIMA model outperforms traditional artificial neural networks (ANN) but falls short of LSTM's accuracy. Moreover, the integration of time series data with external factors emerges as a promising avenue for future research. Given the dynamic nature of stock markets influenced by factors like politics, economics, and societal trends, accurate forecasting tools are in high demand. This study leverages fundamental and technical analyses, with a focus on financial indicators and past price trends, to predict future stock prices. By employing deep learning and machine learning algorithms such as LSTM, ARIMA, and linear regression, the study evaluates their efficacy in forecasting stock trends. Through rigorous data preprocessing—including feature scaling, autocorrelation analysis, and dataset partitioning—the models are trained and tested using historical stock price data encompassing open, close, high, and low values. The results underscore the importance of selecting the most suitable model and parameter values tailored to individual company datasets for optimal predictive performance. Ultimately, this research aims to empower investors with robust forecasting models to navigate the complexities of the stock market and enhance their decision-making processes.