

AI SOLUTIONS FOR FARMERS

A PROJECT REPORT

Submitted by,

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Under the guidance of,

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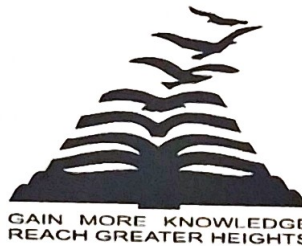
in partial fulfillment for the award of the degree of

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE AND ENGINEERING

At



PRESIDENCY UNIVERSITY

BENGALURU

DECEMBER 2024

PRESIDENCY UNIVERSITY

SCHOOL OF COMPUTER SCIENCE ENGINEERING

CERTIFICATE

This is to certify that the Project report "AI SOLUTIONS FOR FARMERS" being submitted by "Baliya Rakesh, Allu Pravalika, Lakshmi Priya P bearing roll numbers "202011CSE0058, 20201CSE0261, 20211CSE0046" in partial fulfillment of the requirement for the award of the degree of Bachelor of Technology in Computer Science and Engineering is a bonafide work carried out under my supervision.



Mr. Jerrin Joe Francis

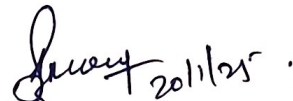
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DECLARATION

We hereby declare that the work, which is being presented in the project report entitled **AI SOLUTIONS FOR FARMERS** in partial fulfillment for the award of Degree of **Bachelor of Technology in Computer Science and Engineering**, is a record of our own investigations carried under the guidance of **Mr. Jerrin Joe Francis, School of Computer Science Engineering & Information Science, Presidency University, Bengaluru.**

We have not submitted the matter presented in this report anywhere for the award of any other Degree.

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ABSTRACT

The agricultural sector faces challenges such as unpredictable weather, fluctuating crop yields, and resource management inefficiencies. This study proposes an AI-based solution combining Linear Regression, Random Forest Regression, and Long Short-Term Memory (LSTM) models to empower farmers with data-driven decision-making tools for sustainable and efficient farming. Linear Regression is applied to analyze relationships between variables such as soil nutrients, water usage, and fertilizer application, offering farmers simple yet insightful predictions for yield optimization. Random Forest Regression enhances this by handling complex, non-linear dependencies, such as the effects of weather variability and pest outbreaks on crop health, ensuring accurate and reliable predictions. LSTM models, specialized in processing sequential and time-series data, provide long-term forecasts of rainfall, temperature trends, and seasonal crop behavior, enabling proactive planning for planting and harvesting cycles. The integration of these models supports precise yield forecasting, optimal irrigation scheduling, pest and disease risk prediction, and resource allocation. By combining interpretable and advanced machine learning techniques, the solution delivers actionable insights tailored to the unique needs of farmers, improving productivity, reducing costs, and promoting environmental sustainability.

ACKNOWLEDGEMENT

First of all, we indebted to the **GOD ALMIGHTY** for giving me an opportunity to excel in our efforts to complete this project on time.

We express our sincere thanks to our respected dean **Dr. Md. Sameeruddin Khan**, Pro-VC, School of Engineering and Dean, School of Computer Science Engineering & Information Science, Presidency University for getting us permission to undergo the project. We express our heartfelt gratitude to our beloved Associate Deans **Dr. Shakkeera L** and **Dr. Mydhili Nair**, School of Computer Science Engineering & Information Science, Presidency University, and **Dr. Asif Mohamed H B** Head of the Department, School of Computer Science Engineering & Information Science, Presidency University, for rendering timely help in completing this project successfully. We are greatly indebted to our guide **Mr. Jerrin Joe Francis**. and Reviewer **Mr. Jothish C** School of Computer Science Engineering & Information Science, Presidency University for his inspirational guidance, and valuable suggestions and for providing us a chance to express our technical capabilities in every respect for the completion of the project work.

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