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MINI PROJECT REPORT

OF

CROP PREDECTION USING MACHINE LEARNING

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CERTIFICATE

Certified that the mini project work entitled "CROP PREDECTION USING MACHINE LEARNING" is a bonafide work carried out by

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in partial fulfillment for the award of BACHELOR OF ENGINEERING in INFORMATION SCIENCE AND ENGINEERING of the VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELGAUM 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.

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ABSTRACT

In the face of climate change and an ever-growing global population, the agricultural sector faces significant challenges in ensuring food security. Traditional farming methods are often insufficient to predict crop yields accurately, leading to inefficiencies and potential crop failures. This project, "Crop Prediction Using Machine Learning," aims to address these challenges by leveraging advanced machine learning algorithms to forecast crop yields more accurately. This study employs a combination of historical agricultural data, weather patterns, soil health metrics, and satellite imagery to build robust predictive models. Various machine learning techniques, including linear regression, decision trees, random forests, and neural networks, are explored and compared to identify the most effective approach for crop prediction.

The model's performance is evaluated based on metrics such as accuracy, precision, and recall, and is further validated through cross-validation techniques. Additionally, the project investigates the impact of different features on crop yield prediction, providing insights into the most critical factors affecting agricultural productivity. The outcomes of this research demonstrate the potential of machine learning in transforming agricultural practices by enabling data-driven decision-making. Accurate crop predictions can assist farmers in optimizing their resources, planning for planting and harvesting, and mitigating the risks associated with adverse weather conditions. Ultimately, this project contributes to the broader goal of enhancing food security and sustainability in agriculture through technological innovation.