VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI

A PROJECT REPORT ON

"TIMELY DETECTION OF DISEASES IN MAIZE CROPS USING DEEP LEARNING"

Submitted in partial fulfillment for the award of Degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE & ENGINEERING

By

NISCHAL M R	4AL19CS060
PRUTHVIRAJ D A	4AL19CS071
RISHAB V	4AL19CS076
VINAY C T	4AL19CS107

Under the Guidance of

Dr. S Mohideen Badhusha

Senior Professor

ALVA'S
Education Foundation

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY

MOODBIDRI-574225, KARNATAKA

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MIJAR, MOODBIDRI D.K. -574225, KARNATAKA

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CERTIFICATE

This is to certify that the project entitled **"TIMELY DETECTION OF DISEASES IN MAIZE CROPS USING DEEP LEARNING"** has been successfully completed by

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the bonafide students of **DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING, ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY** of the **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI** during the year 2022–23. 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 forthe Bachelor of Engineering Degree.

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Dr. S Mohideen Badhusha
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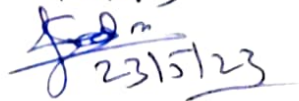Mijar, MOODBIDRI - 574 225

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DECLARATION

We,

NISCHAL M R

PRUTHVIRAJ D A

RISHAB V

VINAY C T

hereby declare that the dissertation entitled "TIMELY DETECTION OF DESEASES IN MAIZE CROPS USING DEEP LEARNING" is completed and written by us under the supervision of our guide **Dr.S. Mohideen Badhusha**, Senior Professor, Department of Computer and Engineering, Alva's Institute of Engineering and Technology, Moodbidri, in partial fulfillment of requirements for the award of the degree **BACHELOR OF ENGINEERING** in **DEPARTMENT OF COMPUTER AND ENGINEERING** of the **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELGAVI** during the academic year 2022- 23. The dissertation report is original and it has not been submitted for any other degree in any university.

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ACKNOWLEDGEMENT

ABSTRACT

Misdiagnosis of many diseases affecting agricultural crops can lead to misuse of chemicals, increased input costs causing more outbreaks with significant economic loss and environmental impacts. Maize is one of the most largely cultivated crops worldwide. However, the infections caused in maize will significantly reduce its yield and quality. The traditional disease diagnosis based on human supervision is time-consuming and expensive. The timely detection and early prevention of diseases affecting the maize crop is playing a crucial role in increasing the yielding of the crop by lowering both qualitative and quantitative losses of the crop. A comprehensive deep learning model namely Diag-Maize has been developed using a real-time data set of maize leaves which has been built with the assistance of seasoned farmers and agricultural specialists in the production of maize crop. The quicker R-CNN model has been deployed in the proposed model to extract features and the K-nearest neighbors' technique is included to classify whether the maize crop is infected or uninfected. The proposed model Diag-Maize has been developed with a real-time data set which has been created by seasoned farmers and agricultural experts along with annotations of the various photos of the maize leaves. Thus, the proposed model Diag-Maize has been appropriately trained to fetch the detection accuracy of 96% which is comparatively 8% greater than that of the existing Deep learning model which implemented k-nearest neighbors' algorithm alone.