VISVESVARAYA TECHNOLOGICAL UNIVERSITY,

BELAGAVI

A PROJECT REPORT ON

"CLASSIFICATION AND DETECTION OF FRUIT DISEASES USING IMAGE PROCESSING"

Submitted in partial fulfillment for the award of Degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE & ENGINEERING

By

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CERTIFICATE

This is to certify that the project entitled **"CLASSIFICATION AND DETECTION OF FRUIT DISEASES USING IMAGE PROCESSING"** 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 2023–24. 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 Projectwork prescribed for the Bachelor of Engineering Degree.

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ABSTRACT

The agricultural sector plays a vital role in the economy, and fruit crops constitute a significant portion of agricultural production worldwide. However, fruit crops are susceptible to various diseases, which can lead to substantial yield losses if not detected and managed promptly. Manual inspection of crops for disease symptoms is time-consuming and often prone to errors. Therefore, automated systems for disease detection are becoming increasingly important. This paper proposes a novel approach for the classification and detection of fruit diseases using image processing techniques. The proposed system utilizes digital images of fruit samples captured using high-resolution cameras or smartphones. These images are preprocessed to enhance features and reduce noise. Subsequently, state-of-the-art machine learning algorithms, such as convolutional neural networks (CNNs), are employed for disease classification. CNNs have shown remarkable success in image classification tasks due to their ability to automatically learn discriminative features from raw data.The dataset used for training and testing the classification model consists of images of healthy fruits and fruits affected by various diseases. The model is trained to accurately classify fruit images into different disease categories, enabling rapid identification of diseased crops in the field. Additionally, the proposed system incorporates techniques for disease localization, enabling precise detection of disease symptoms on fruit surfaces. Experimental results demonstrate the effectiveness of the proposed approach in accurately classifying and detecting fruit diseases. The system achieves high classification accuracy and demonstrates robustness against variations in lighting conditions and fruit appearance. Moreover, the proposed system offers real-time disease detection capabilities, facilitating timely intervention to mitigate the spread of diseases and minimize yield losses.