**TOMATO LEAF DISEASES DETECTION USING YOLO**

**A PROJECT REPORT**

***Submitted by***

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**ABSTRACT**

Plants provide a significant portion of the world's food supply. Plant diseases are a factor in productivity loss, although they can be avoided with constant monitoring. Plant disease monitoring by hand is time-consuming and error-prone. Early detection of plant diseases with computer vision and artificial intelligence (AI) can help to reduce disease severity and overcome the limitations of continuous human monitoring. In a rising agricultural economy, early detection and diagnosis of plant leaf diseases is a major necessity. India ranked 2nd in the production of tomatoes. However, due to numerous illnesses, the quality and quantity of the tomato crop suffers. Tomatoes are one of the most important crops grown in large quantities with high commercial value, contributing to the food chain and security while also being a profitable business for many farmers. A regression-based technique is used for disease identification and classification.The YOLO algorithm is used to detect and classify diseases. The classification accuracy varies from 86% to 98% with respect to classes for the 9 diseases and one healthy class.

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**LIST OF ABBREVIATIONS**

AI-Artificial intelligence

ANN-Artificial Neural Networks

CNN-convolutional neural network

CBN-Cross-iteration batch normalization

CSP-Cross-Stage-Partial connections

FPN-Feature Pyramid Networks

GLCM-Gray Level Co-ocurrence Matrix

IOU- Intersection Over Union

MAP- Mean Average Precision

MKSVM-Multi-Kernel Support Vector Machine

MCNN-Multilayer Convolution Neural Network

PAN-Pan aggregation network

RELU- Rectified Linear Activation Function

RCNN- Region-based Convolutional Neural Network

SSD-single shot detector

SAT-Self-adversarial-training

SVM- Support Vector Machine

WRC-Weighted-Residual-Connections

YOLO-You Only Look Once

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