PREMIER UNIVERSITY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

A Project Report On

YOUR project Title Goes Here in UPPER CASE

Course Title: Software Development

Course Code: CSE 364

Submitted To:

Faculty Name

Designation

Department of Computer Science and Engineering

Submitted By:

Full Name (PU Exam Roll No)

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Abstract

Cassava, a vital crop in many developing countries, is highly susceptible to several leaf diseases that negatively affect yield and food security. Traditional disease identification methods are time-consuming, costly, and often inaccessible to smallholder farmers. This study proposes a deep learning-based approach for classifying cassava leaf diseases using a publicly available image dataset. Several state-of-the-art transfer learning models were evaluated, including Xception, EfficientNetB0, ResNet50, VGG16, DenseNet121, and InceptionV3. Through comparative analysis, the Xception model achieved the highest classification accuracy, demonstrating its effectiveness in recognizing subtle visual differences in infected leaves. Data augmentation and preprocessing techniques were applied to enhance model performance. The findings suggest that deep learning can provide a reliable, scalable, and low-cost solution for early plant disease detection, potentially aiding farmers in timely decision-making and contributing to food security.

Keywords: deep learning, transfer learning, convolutional neural network (CNN), crop disease classification, Xception, cassava leaf

GitHub Repository: **https://github.com/ArnabShikder24/odyssey-travel-client**