AN EXPERT SYSTEM FOR DISEASE PREDICTION AND FERTILIZER RECOMMENDATION USING DEEP LEARNING

ABSTRACT

In the realm of agriculture, the production of tomatoes holds critical importance for global food security and economic stability. However, this vital crop is threatened by a range of diseases, and inefficient fertilizer application exacerbates these issues, leading to substantial losses for farmers. While there exist Tomato plant disease detection systems with different efficient advanced deep learning models, these disease detection systems often lack fertilizer recommendations. This project aims to bridge this gap by introducing an integrated expert system for disease detection and efficient fertilizer recommendation for tomato plants. The proposed methods for this expert system involve utilizing advanced deep learning models such as MobileNet and DenseNet for disease detection. Additionally, rule-based machine learning algorithms, including decision trees, random forests, and XGBoost, are employed for fertilizer recommendation. For further experiments and improvements, alternative algorithms such as Support Vector Machine or Naïve Bayes algorithms will be explored. The "tomato village" dataset is used for training and validation of the system. The proposed expert system for disease detection combined with fertilizer recommendation has the potential to revolutionize tomato cultivation practices, enhancing crop yield, reducing environmental impact, and ultimately bolstering agricultural sustainability. Its implementation promises a brighter and more resilient future for tomato cultivation, offering a comprehensive solution to the challenges faced by farmers and contributing to a more sustainable and efficient agricultural industry.

Team Members   **Internal Guide**

K Geethika Reddy – 20WH1A1270   **Name: Mr. A. Rajashekar Reddy**

G Krishna Prathibha – 20WH1A12B0   **Designation: Assistant Processor**

G Sneha – 20WH1A12B5