

A Comprehensive Review on Suitable Image Processing and Machine Learning Technique for Disease Identification of Tomato and Potato Plants

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Abstract. Agriculture is essential to Sri Lanka's economic development. It is vital to develop some new strategies in order to uplift the agricultural sector of Sri Lanka. Among the different vegetable crops cultivated in Sri Lanka, tomatoes and potatoes have a higher export value and are easily grown in many parts of the country. The major issue faced by the Sri Lankan vegetable cultivators is that there is no proper mechanism to identify the type of diseases infected on the vegetable plants and moreover there is a lack of knowledge on the solutions to be applied in order to protect the vegetable crops from being destroyed. Human experts continue to perform the traditional inspection of vegetables in Sri Lanka. It is a time taking and labour-intensive task.

In order to come up with a solution for this issue a system needs to be developed to identify the type of diseases that infected potato and tomato plants and provide the necessary solutions to be taken in order to protect the vegetable crops from being destroyed. Moreover, the system should update the types of diseases that infected tomato and potato plants on a map of Sri Lanka, based on the area of cultivation throughout the country. This will help other vegetable cultivators to be aware of the diseases most common in their area of cultivation and take appropriate precautions. Features such as shape, colour, and size can be extracted from an image of any vegetable plant to identify the type of disease infected. The aim of this research is to find the most suitable machine learning algorithm and image processing technique to be used in the proposed system.

Keywords: *image processing, machine learning, plant disease identification*