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**Mango disease classification and management in the early stage  
using AI and image processing**

A Project Proposal by

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## ABSTRACT

The agriculture is one of the main economic sector of livelihood in South Asian countries (Trang et al., 2019) and the mango cultivation is a major milestone in these agricultural activities. The farmers have to turn to the experts to get advice on infectious diseases in crop cultivation. The process of consulting by these experts could be taken a very long time and it would be very expensive (Arya and Singh, 2019), whereas the lack of experienced experts is another problem faced by farmers. The people have provided many solutions to various problems of the different sector, whereas the agriculture sector also is moving for the different solution which are provided to the different agricultural problems (Kusrini et al., 2020). At the present, the computer vision and artificial intelligence are the popular technologies which are used for giving solution to the different problems and also these technologies have been used to detect plant diseases according to the existing literature (Singh et al., 2019). According to the existing research, almost all research has been done their works for detecting and classifying diseases after spreading the disease all over the leaf. This disease detecting latency would be a reason to destroy farmer's cultivation and it would be a reason for reducing their harvest.

The aim of this proposed work is to detect and classify six mango disease types at the early stage using image processing and deep learning algorithms. In order to achieve this, the author has decided to use transfer learning which has been implanted on the pre-trained model on ImageNet, Whereas MobileNet has been used as the pre-trained algorithm. In the proposed system, the TensorFlow Lite model has performed well when embedded in mobile devices since it operates locally. The image data augmentation has been done by the author due to the lack of image data. The dataset consists of around 1200 mango leaves images, and it consists of six classes of mango diseases. They are Phoma blight, Sooty mould, Scab, Anthracnose, Bacterial Canker and healthy. An accuracy of around 75% was achieved for the model and this is the accuracy that author has received in the model testing and evaluation. In the that stage, F1 score were achieved 94%, 64%, 64%, 58%, 75% and 94% for Anthracnose, Phoma blight, Scab, Sooty mould, Bacterial Canker and healthy respectively.

**Keyword:** Computer Vision, Transfer Learning, Convolutional Neural Network, Mobile Detection, Mango disease detection

**Subject Descriptors :** Computing methodologies → Machine learning → Machine learning approaches → Neural network

Computing methodologies → Artificial intelligence → Computer vision