RECOGNITION AND CLASSIFICATION OF YIELD AFFECTING PADDY CROP STRESSES USING FIELD IMAGES

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ABSTRACT

On-time recognition and early control of the stresses in the paddy crops at the booting growth stage is the key to prevent qualitative and quantitative loss of agricultural yield. The conventional paddy crop stress recognition and classification activities invariably rely on human experts identifying visual symptoms as a means of categorization. This process is admittedly subjective and error-prone, which in turn can lead to incorrect actions being taken in stress management decisions. Recognition and classification of yield affecting paddy crop stresses using field images aims to design different deep convolutional neural network (DCNN) framework for automatic recognition and classification of various paddy crop stresses using the field images. Four different classifiers, the Convolutional Neural Network (CNN), pre-trained VGG-16, Mobilenet and Inception V3 models have been deployed to distinguish biotic stresses such as bacterial leaf blight, fungal blast and brown spot. The average stress classification accuracies of 92%, 95% , 85% and 98% have been achieved using the CNN, VGG-16, Mobilenet and Inception V3 classifiers, respectively.