

Title: Machine Vision Based Local Hyacinth Bean Breed Recognition Using Convolutional Neural Network

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Abstract: The classification is a significant one. This paper proposes a CNN-based Local Hyacinth Bean Breed Recognition (CNN-LHBR) approach along with a machine vision approach. Among the 52 breeds, we have taken only eight categories, namely Bashpaki Faridpur, Chaina Sada Patla Chela, Gochi, Kajoli, Katla, Lati, Noldub, and Pudi Aishna. There are many works done before about breed detection of different fruits as well as disease recognition. But no research has done such a work as LHBR, especially in Bangladesh. The interest of this research is the reason for the high protein and vitamin B complex; besides, each bean has a separate test, yield, seed, and nutrition level. More importantly, we have implemented 3 CNN models for the experiment of the breed recognition of 8 Hyacinth Bean specimens. For model accuracy, we have considered training, validation, and testing accuracy. As for performance evaluation, the confusion matrix has been applied. Among the models, the customized CNN model gives the best accuracy. The customized CNN model's accuracy is 97.50%.

Keywords: Hyacinth Bean , CNN , Catla , China Sada chala , Lati. Accuracy

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