

Accurate Medicinal Plant Identification in Natural Environments by Embedding Mutual Information in a Convolution Neural Network Model

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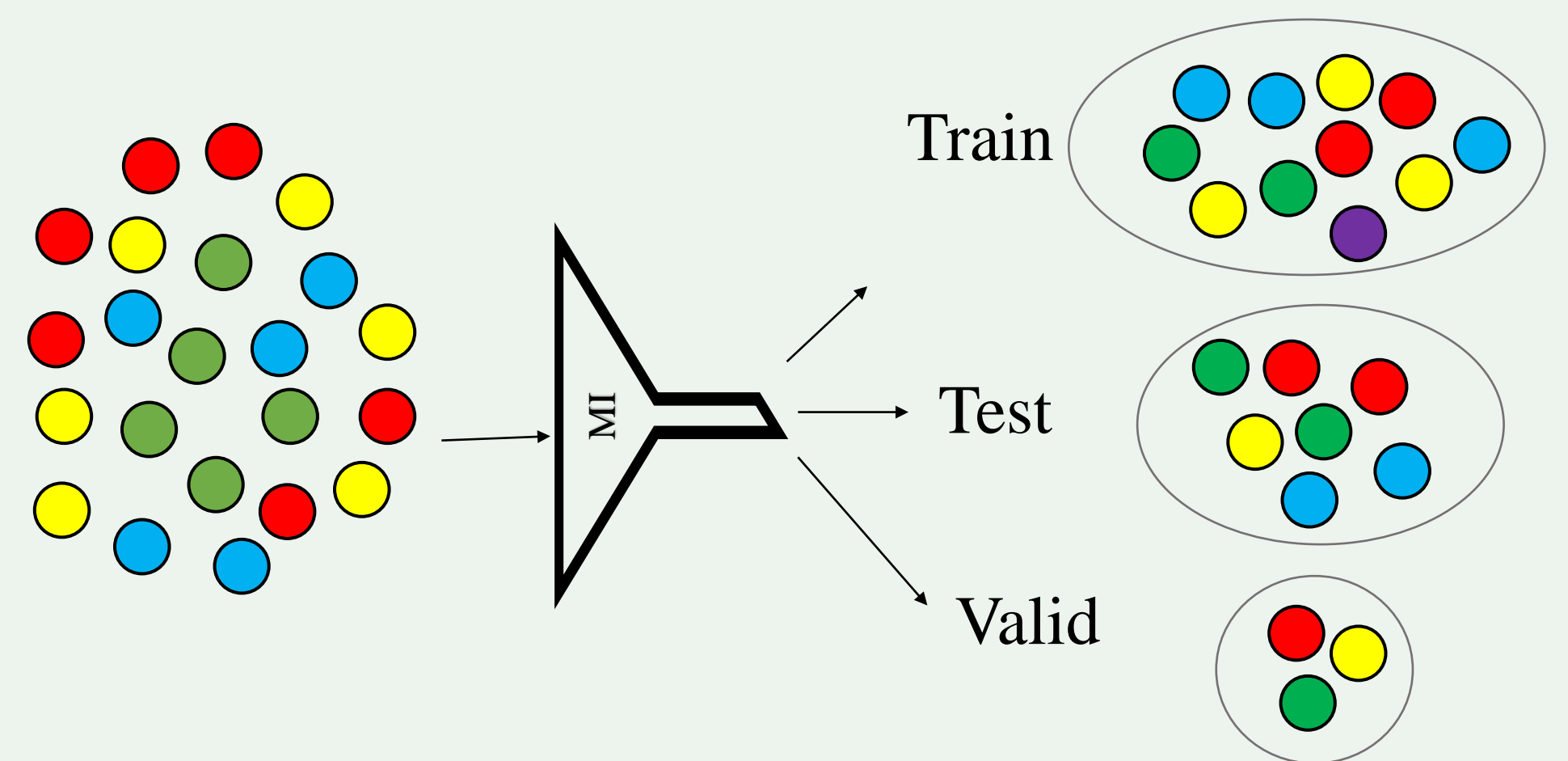


BACKGROUND

Medicinal plants are a primary source of disease treatment in many countries. As most are edible however, consumption of the wrong herbal plants can have serious consequences and even lead to death. While deep learning (DL) based methods have made considerable strides in recent times, their potential has not always been maximised.



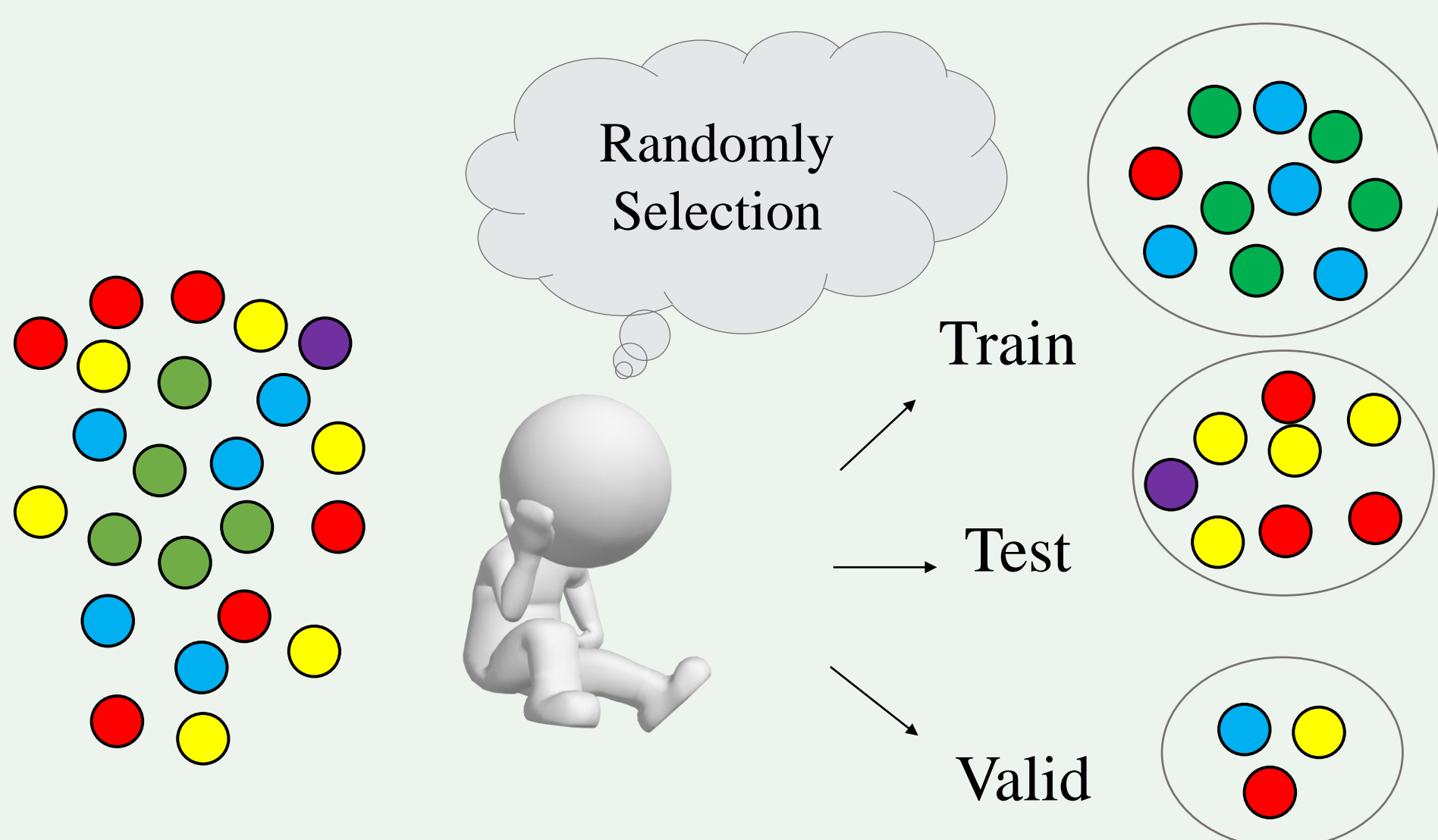
METHODOLOGY



Mutual Information Guided Training (MIGT)

Using a similarity measure namely as Mutual Information, to guide the selection of samples which best reflect the distinguishing appearances of that class in the training set.

CHALLENGE



Classification performance for certain species is notably lower than the overall accuracy as Convolutional Neural Network (CNN) being trained by image samples that fail to reflect broader intra-class variations due to randomly selection of datasets.

RESULTS

Table II
Classification Performance in VNPlant-200 dataset

Method	Accuracy	Precision	Recall	F1-score
Randomly selection	88.26	-	-	-
MIGT selection	97.31	97.33	97	97

Precision Improvement In Three Species With Poor Performance

