Report on Crop Image Classification

1. Introduction

This is a work on image classification. Earlier we tried images like cats and dogs and other images where distinction is clear. We would like to check whether this classification works on crops where image distinction is not that much clear due to leaves.However we achieved good accuracy in this case also.

2. Related Work

We used the transfer learning concept instead of training our classifier from scratch. We used mobilenetv2 for our transfer learning purpose

3. Materials and Experimental Evaluation

3.1 Dataset

1. Agri crop image dataset from kaggle
2. PNG images
3. NO changes made to original dataset
4. Number of Classes: 4
5. Class Distribution: All classes are uniformly populated
6. Training and Testing: We used 80% of the data for training and 20% for Validation

3.2 Methodology

We fine tuned our model using number of epochs and learning rate. The results are depicted in the following figure
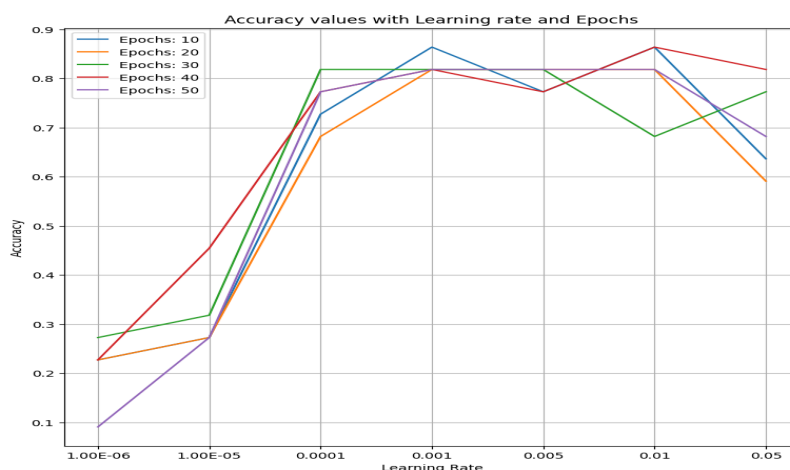
3.3 Results

Classification Report :

	precision	recall	f1-score	support
0	0.86	0.79	0.83	24
1	0.81	0.88	0.84	24
2	0.82	0.78	0.83	24
3	0.81	0.87	0.84	24
accuracy			0.83	48
macro avg	0.84	0.83	0.83	48
weighted avg	0.84	0.83	0.83	48

3.4 Discussion

We have achieved good accuracy with mobinetv2. But, one can try other pretrained networks and other architectures also to achieve good accuracy.

4. Future Work

We have tried only on 4 classes of images due to lack of infrastructure support. With good GPU support, one can try with more number of classes.

5. Conclusion

We achieved good accuracy using our model. This model can be used to classify crop images accurately.

6.Reference

1. Kwak G-H, Park N-W. Impact of Texture Information on Crop Classification with Machine Learning and UAV Images. *Applied Sciences*. 2019; 9(4):643. https://doi.org/10.3390/app9040643
2. Mark Sandler, Andrew Howard, Menglong Zhu, Andrey Zhmoginov, Liang-Chieh Chen: MobileNetV2: Inverted Residuals and Linear Bottlenecks