

PLANT IMAGES CLASSIFICATION



WHAT IS MY SPECIES ?



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INSPIRATION

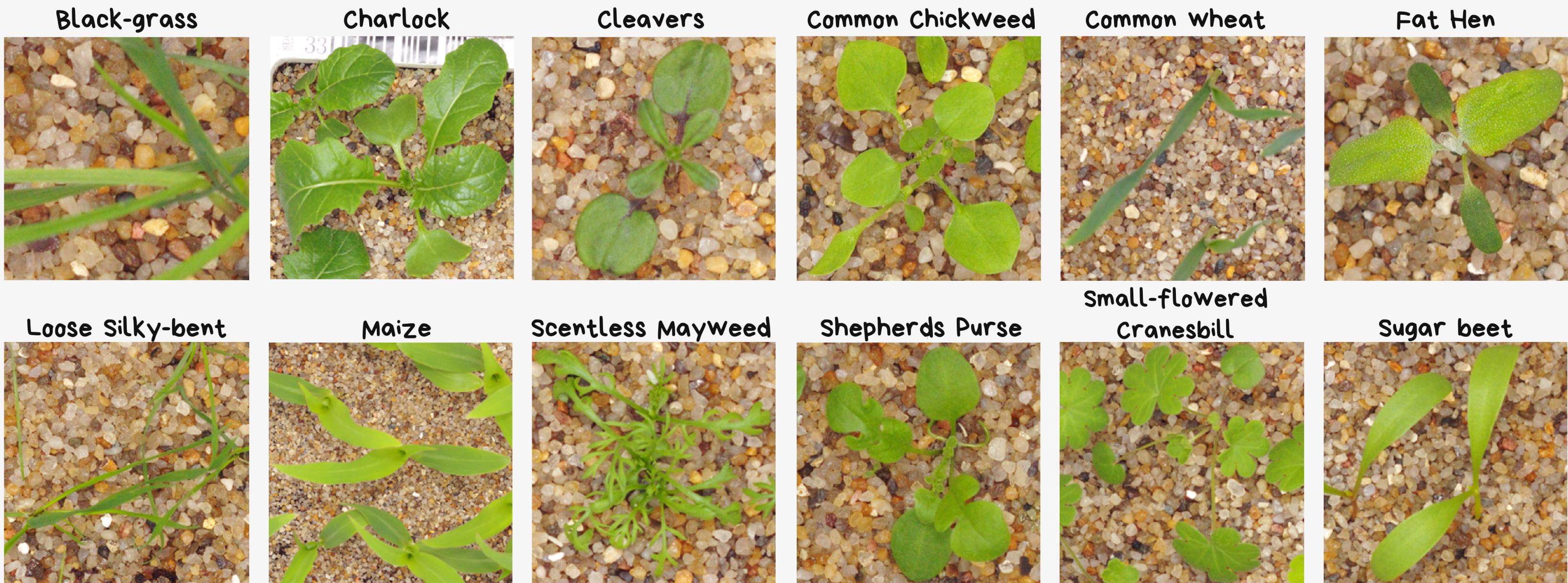
✓ Intelligent farming system
→ Reduce labor & Improve yields

✓ Camera Drone & ML to:

- Monitor plant growth
- Detect disease
- Classify plant types

DATASET

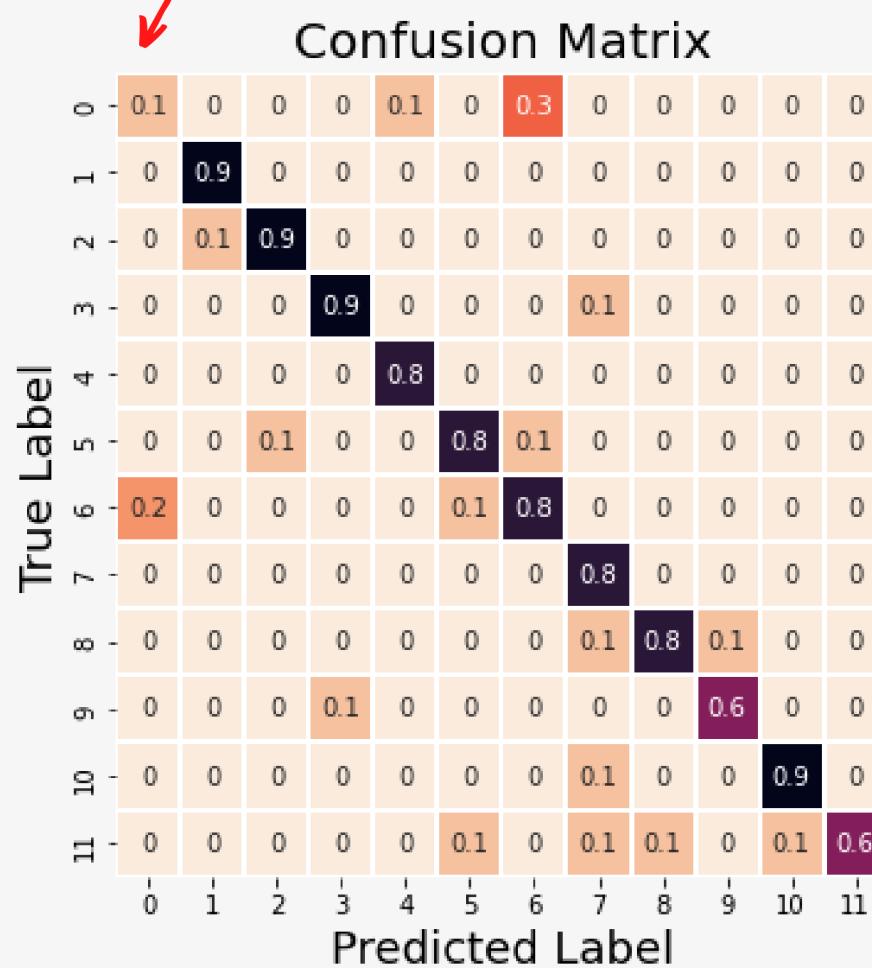
- 4,750 images of plants in 12 species (downloaded from Kaggle)
- Originate from the Aarhus University Signal Processing group & University of Southern Denmark



MODELS

Model 1: Custom CNN

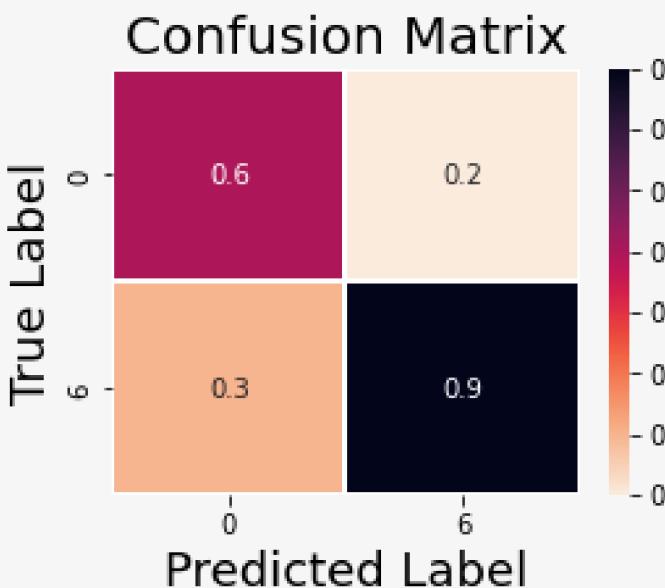
poor prediction for Class 0



Precision = 77%

Recall = 78%

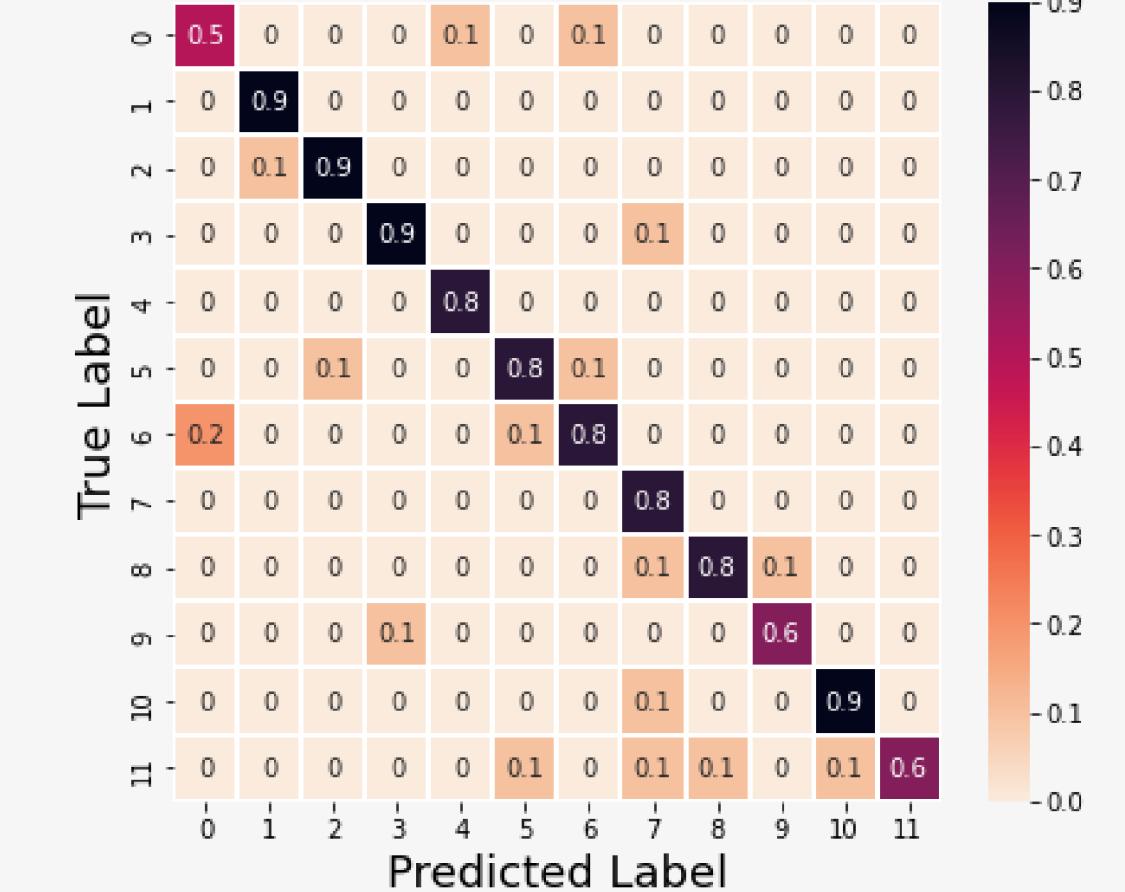
Model 2: Transfer Learning
ResNet50V2



Combined Model

better!

Confusion Matrix

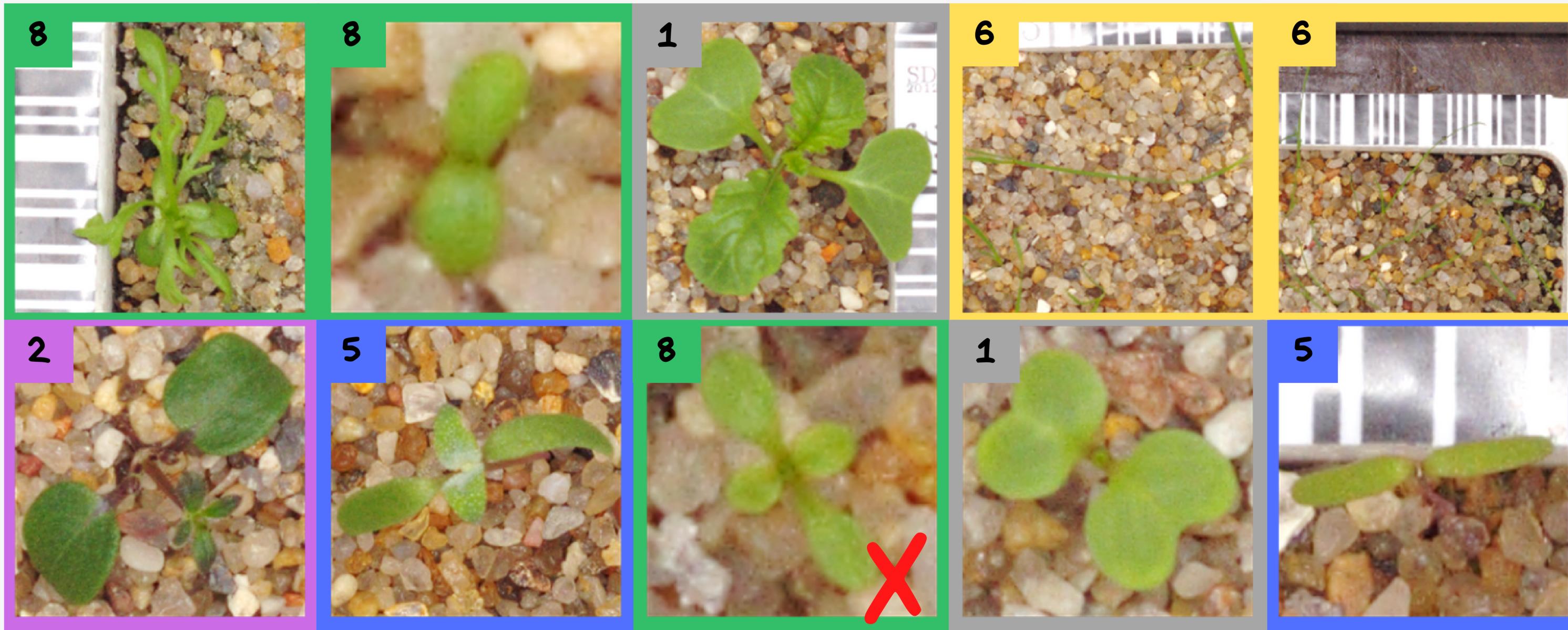


Precision = 80%

Recall = 80%

LET'S TEST IT

- For this sample set, the model predicts 90% correctly
- The model also recognizes different growth stages of the plants



Actual = Class 9

CONCLUSIONS

1 We created a decent model to classify plant types.

 This can be the starting model to use with actual drone images.

2 We found a technique to deal with similar plants.

 This can be helpful if we face with a similar problem.
New challenges are expected with a different dataset.

NEXT STEPS

- Further improve the model by fine-tuning hyperparameters
- Better understand why the model makes wrong predictions
- Implement this model in a real scenario (e.g. with drone images)