

APPENDIX

Exploratory Data Analysis (EDA)

The public dataset consists 60% of train and 40% of test set.

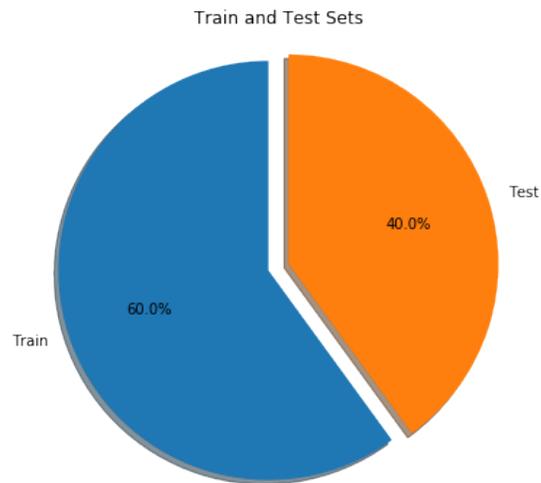


Fig. 1. Percentage of train and test set of data.

Whole public dataset consists of 23.5% of Class: Fish, 31.7% Class: Sugar, 20% Class: Flower, 24.8% Class: Gravel.

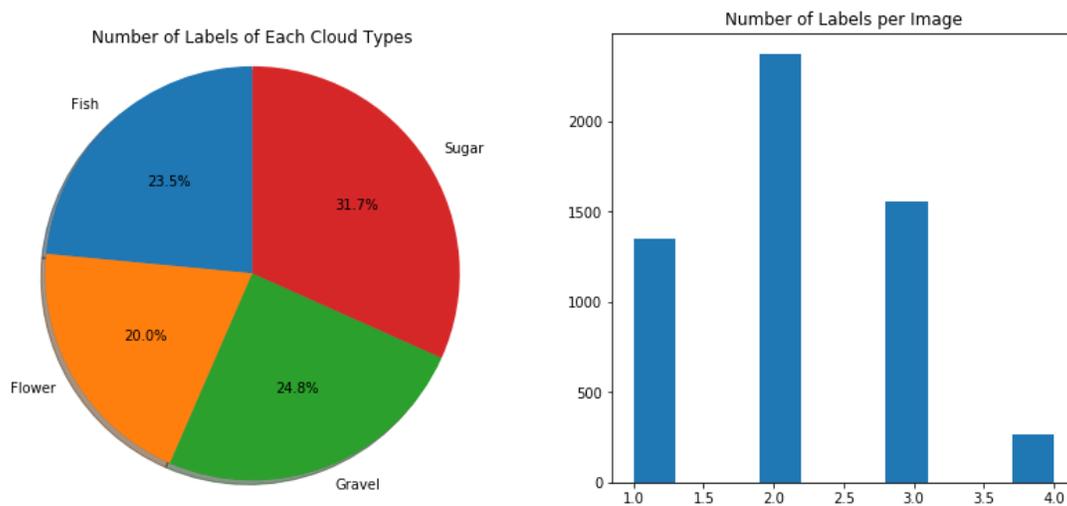


Fig. 2. Percentage of 4 classes among the public dataset.

The dataset consists of multiclass data. A correlation have been shown in Figure 3.

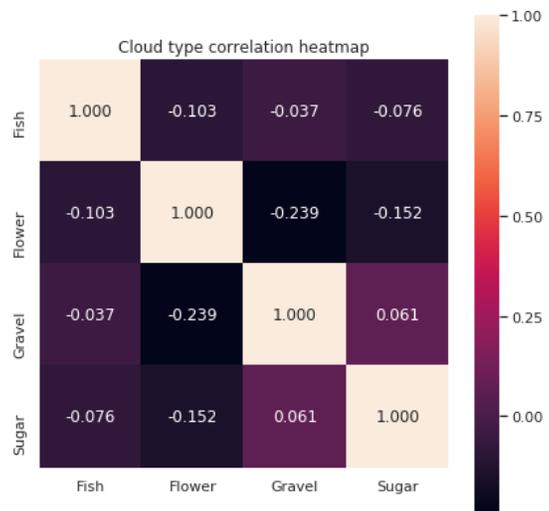


Fig. 3. Cloud type correlation heatmap.

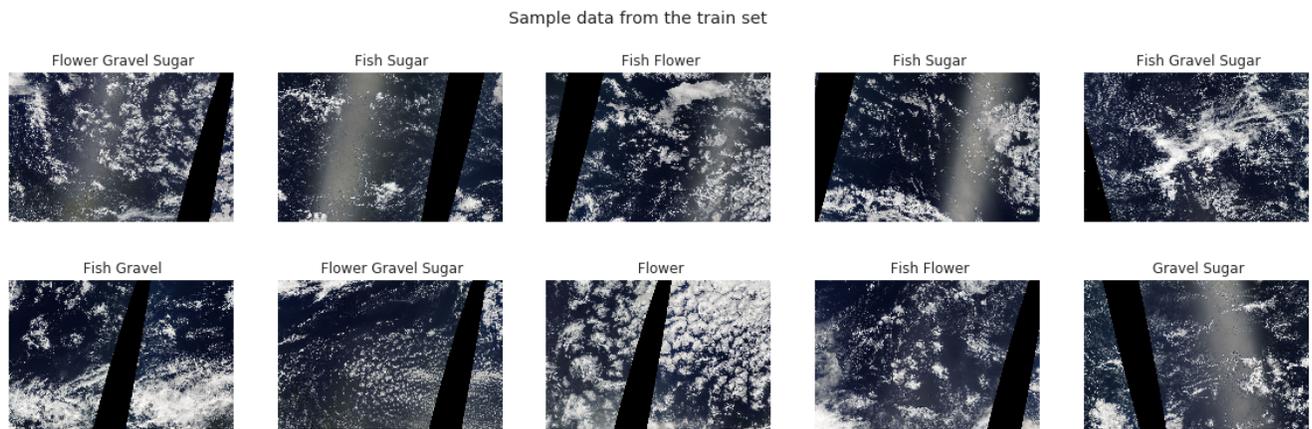


Fig. 4. Sample data from the public train set.

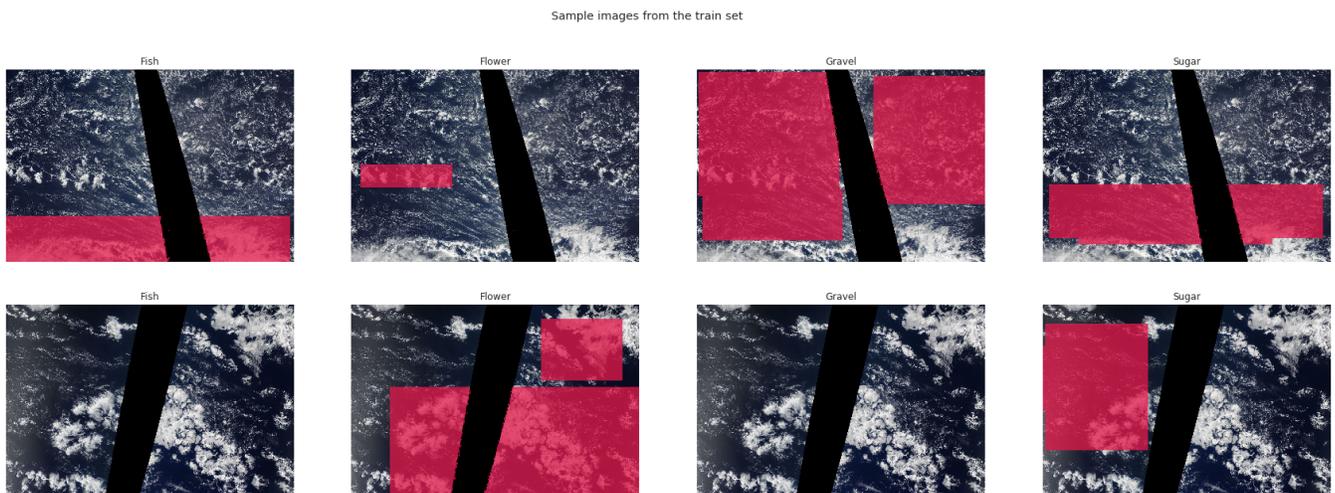


Fig. 5. Masked sample data from the public train set.

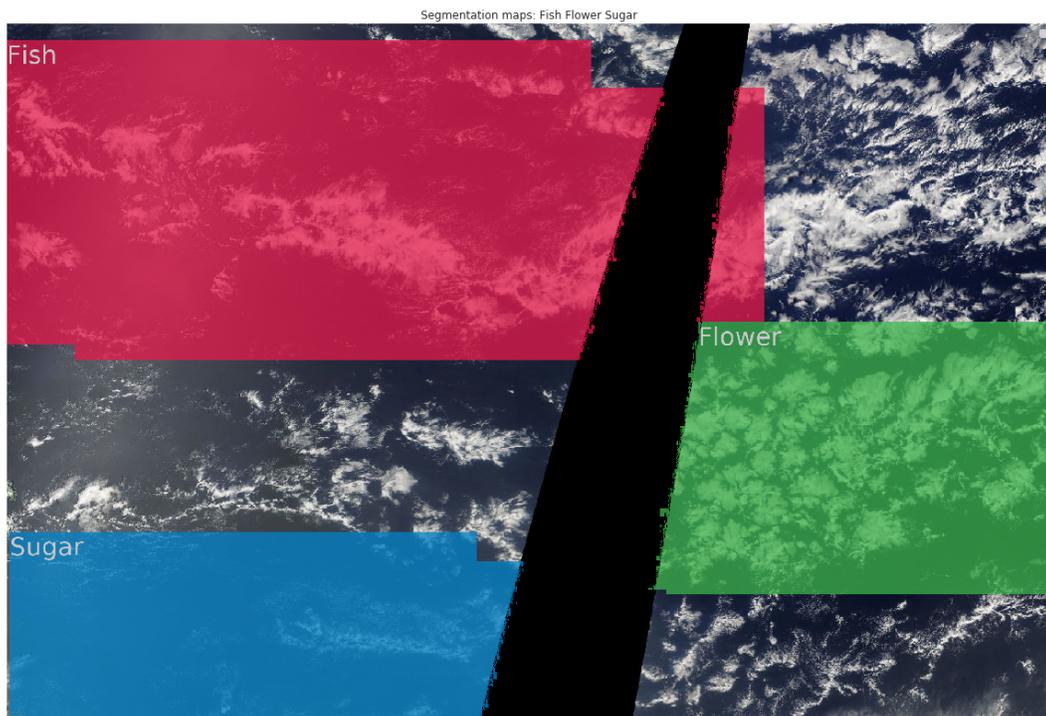


Fig. 6. Segmentation map for Fish, Flower and Sugar classes.

Sample images from the train set

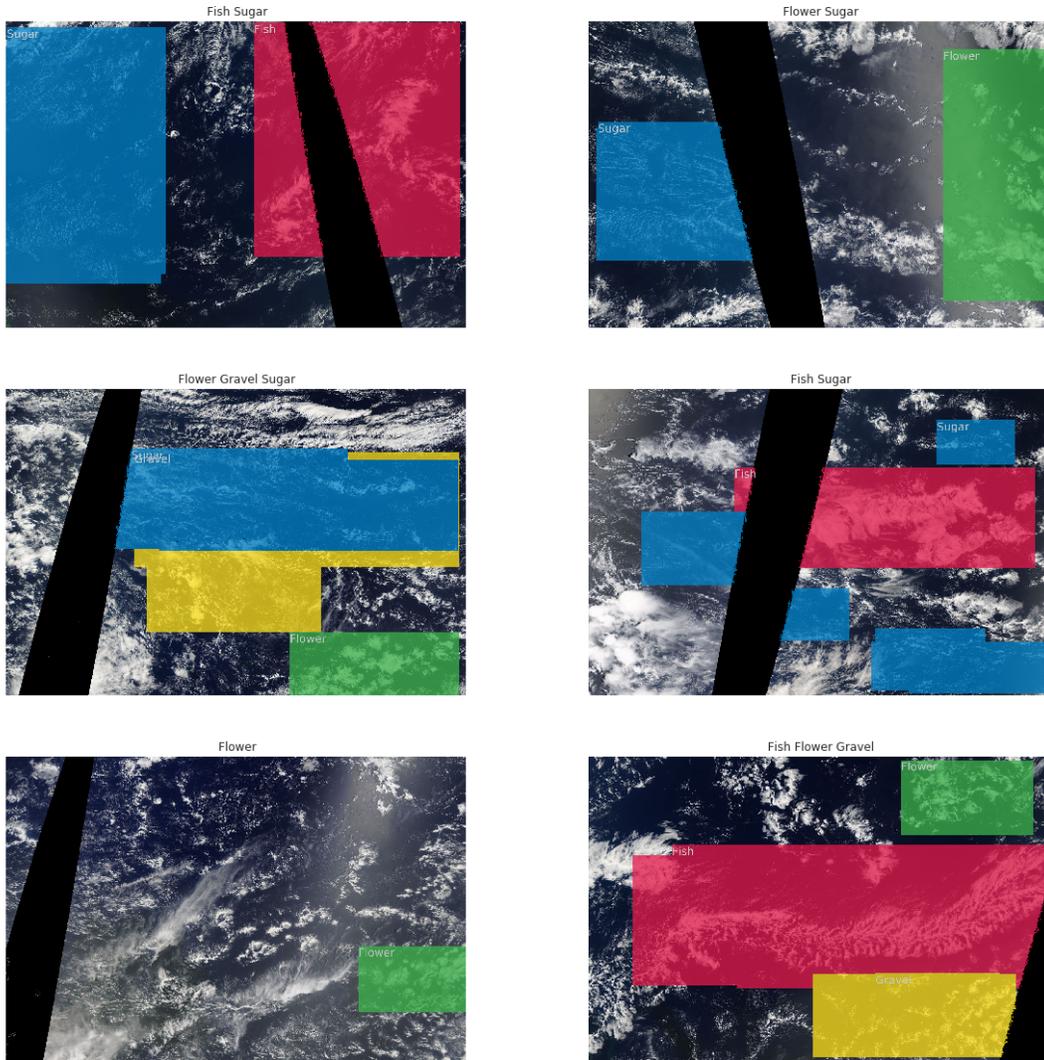


Fig. 7. Sample segmented multiclass image data.

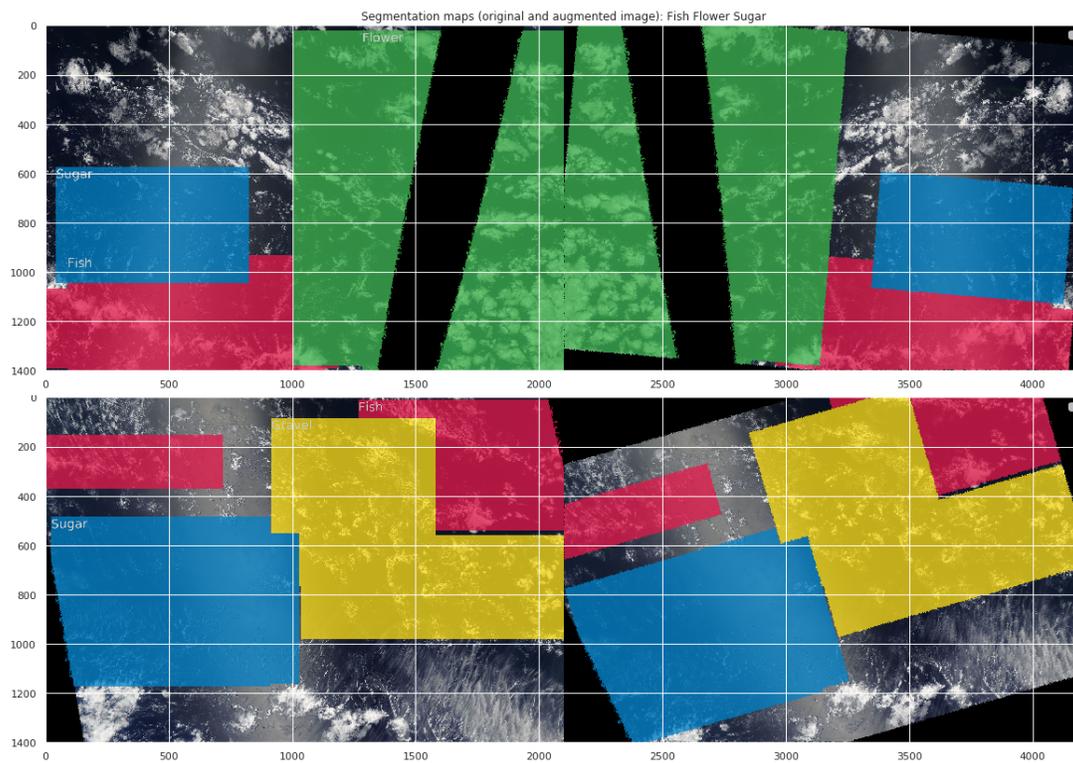


Fig. 8. Segmentation map Left: before augmentation; Right: after augmentation.

PR-AUC; EfficientNet-B0

It takes nearly 25 epochs to train the model to reach the best result while mean PR AUC still increases even after 30 epochs for both train and validation set, showed in **Figure 9**.

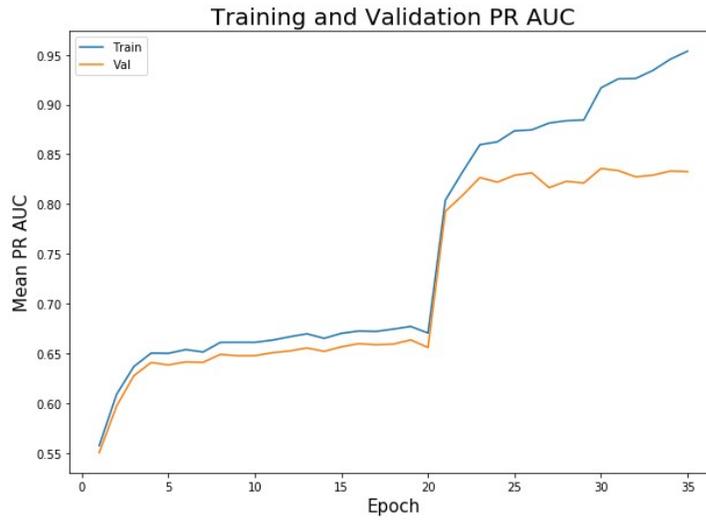


Fig. 9. Training and Validation PR-AUC

Loss Graph; EfficientNet-B0

Train and validation loss graph of EfficientNet-B0 which clearly shows that EfficientNet architecture is not enough to train this data as the loss is not decreasing.



Fig. 10. Training and Validation Loss (CCE) for EfficientNet-B0

Loss Graph; EfficientUNet-B0

Applying EfficientNet as encoder gave a huge success than only EfficientNet as segmentation model, since UNet was able to do the segmentation way better than a regular classification model.

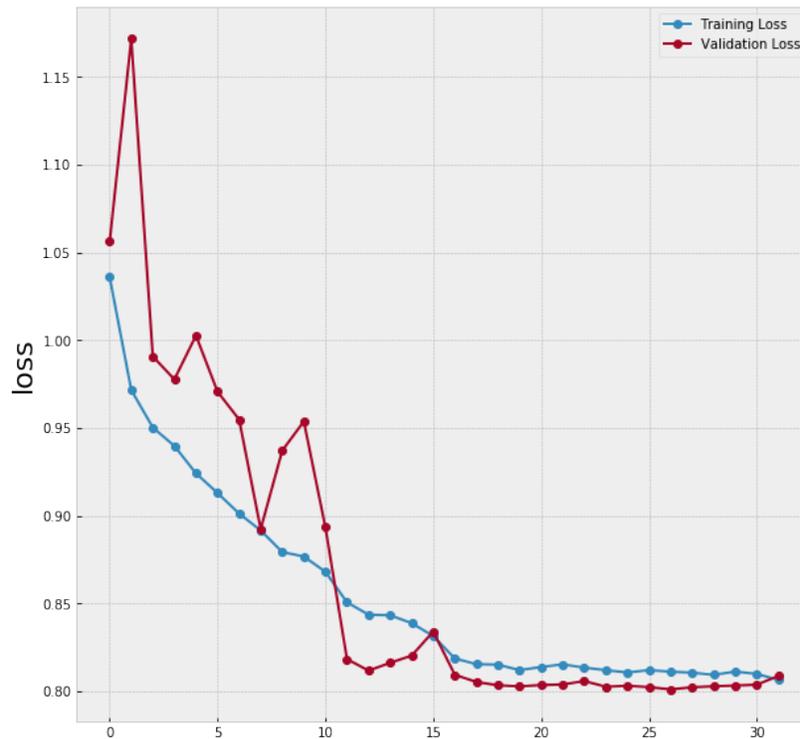


Fig. 11. Training and Validation Loss (DICE) for EfficientUNet-B0

Segmentation Results

