

Challenge: Zero deforestation mission

by DataKillers

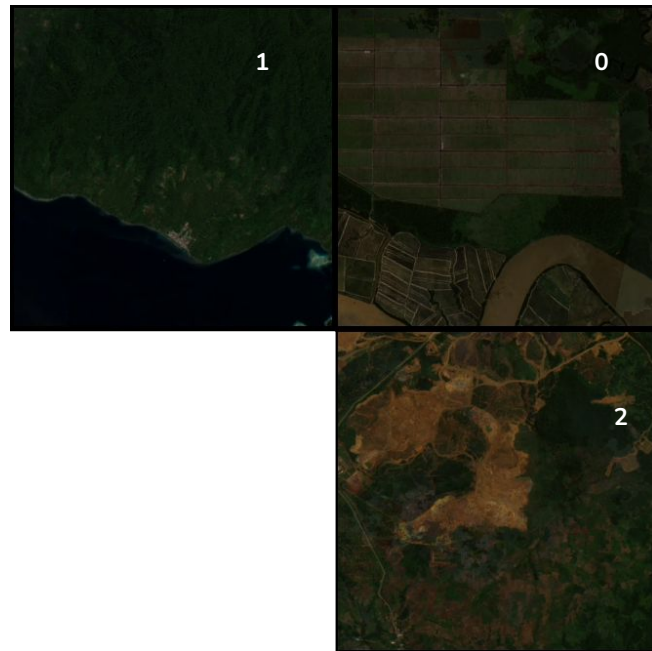




Introduction

This challenge is about of classify images in 3 groups:

- Plantation: Code for identificate this group is 0, it is block rectangular, connected by a well-defined road grid.
- Glassland: Code for identificate this group is 1, large homogeneous areas with few or sparse shrubs or trees, and which are generally persistent.
- Smallholder: Code for identificate this group is 2, small scale area, in which you can find deforestation covered by agriculture.



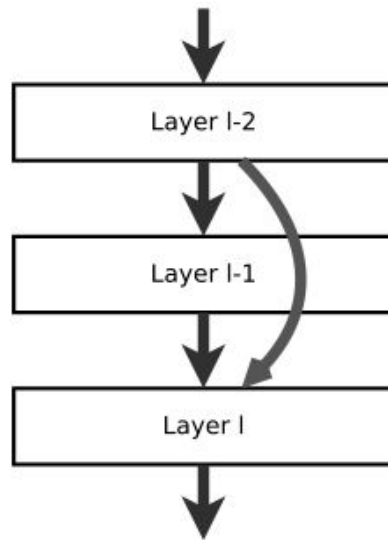


Solution

We have make a residual neural network (ResNet), this use a different layers:

- ReLU
- Linear
- LogSoftmax

this network use a backpropagation through them during training. We also create the criterion (the loss function) and pick an optimize (Adam) and learning rate.



Exemple ResNet

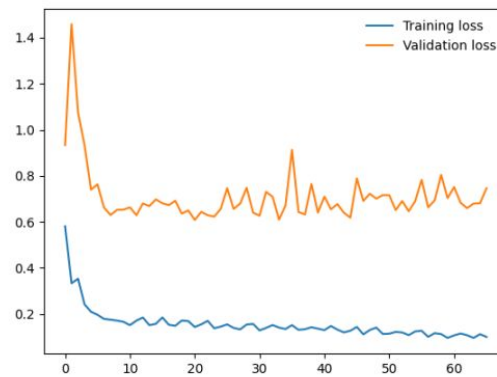


Results

All we see in this slide is by training for 20 epochs and balancing the dataset.

It has been balanced in two forms: oversampling and subsampling, and we remained with oversampling. As oversampling means adding new elements, the code also does data augmentation by randomly choosing and rotating images from minority classes.

In subject of metric our focused is on metric f1-score, this metric combines recall and precision. Our F1 Score is 0.81



```
Epoch 17/20.. Train loss: 0.356.. Test loss: 0.646.. Test accuracy: 0.755.. Test f1: 0.809.. Test precision: 0.830.. Test recall: 0.790
Epoch 17/20.. Train loss: 0.410.. Test loss: 0.691.. Test accuracy: 0.741.. Test f1: 0.798.. Test precision: 0.771.. Test recall: 0.827
Epoch 17/20.. Train loss: 0.419.. Test loss: 0.783.. Test accuracy: 0.696.. Test f1: 0.784.. Test precision: 0.807.. Test recall: 0.762
Epoch 18/20.. Train loss: 0.332.. Test loss: 0.663.. Test accuracy: 0.741.. Test f1: 0.796.. Test precision: 0.861.. Test recall: 0.740
Epoch 18/20.. Train loss: 0.385.. Test loss: 0.694.. Test accuracy: 0.738.. Test f1: 0.778.. Test precision: 0.917.. Test recall: 0.675
Epoch 18/20.. Train loss: 0.371.. Test loss: 0.804.. Test accuracy: 0.707.. Test f1: 0.766.. Test precision: 0.907.. Test recall: 0.663
Epoch 19/20.. Train loss: 0.317.. Test loss: 0.703.. Test accuracy: 0.743.. Test f1: 0.800.. Test precision: 0.880.. Test recall: 0.734
Epoch 19/20.. Train loss: 0.353.. Test loss: 0.751.. Test accuracy: 0.700.. Test f1: 0.775.. Test precision: 0.860.. Test recall: 0.706
Epoch 19/20.. Train loss: 0.380.. Test loss: 0.683.. Test accuracy: 0.729.. Test f1: 0.805.. Test precision: 0.837.. Test recall: 0.776
Epoch 20/20.. Train loss: 0.356.. Test loss: 0.660.. Test accuracy: 0.719.. Test f1: 0.809.. Test precision: 0.815.. Test recall: 0.803
Epoch 20/20.. Train loss: 0.316.. Test loss: 0.680.. Test accuracy: 0.726.. Test f1: 0.805.. Test precision: 0.825.. Test recall: 0.785
Epoch 20/20.. Train loss: 0.370.. Test loss: 0.681.. Test accuracy: 0.720.. Test f1: 0.803.. Test precision: 0.814.. Test recall: 0.792
Epoch 20/20.. Train loss: 0.331.. Test loss: 0.747.. Test accuracy: 0.714.. Test f1: 0.809.. Test precision: 0.786.. Test recall: 0.833
```

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