



NUWE Hackathon:

Zero deforestation mission

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What we have done

Poor health, low resources and the loss of biodiversity are just some of the collateral effects that deforestation and climate change has for our lives. Our planet is in danger and we're in danger too if we don't do something about it. Part of the solution is visualizing the problem and with this challenge, we got our hand dirty and developed a model to predict deforestation.

We created a classification predictive model by designing a CNN (Convolutional Neural Network) in order to classify images related to deforestation environments. First, we split our data into training and validation datasets of tensors, trained our convolutional model using hidden layers as well as a common Neural Network for a front pass, which will use a Sigmoid function (probabilities) and right after that we visualized the evaluation functions such as loss and accuracy by testing our model through test dataset (the prediction dataset).

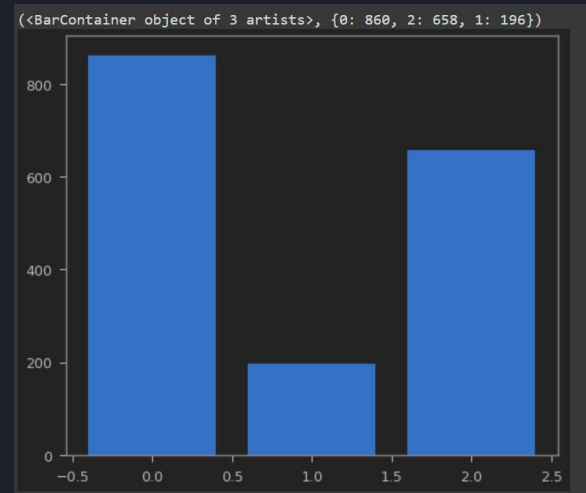
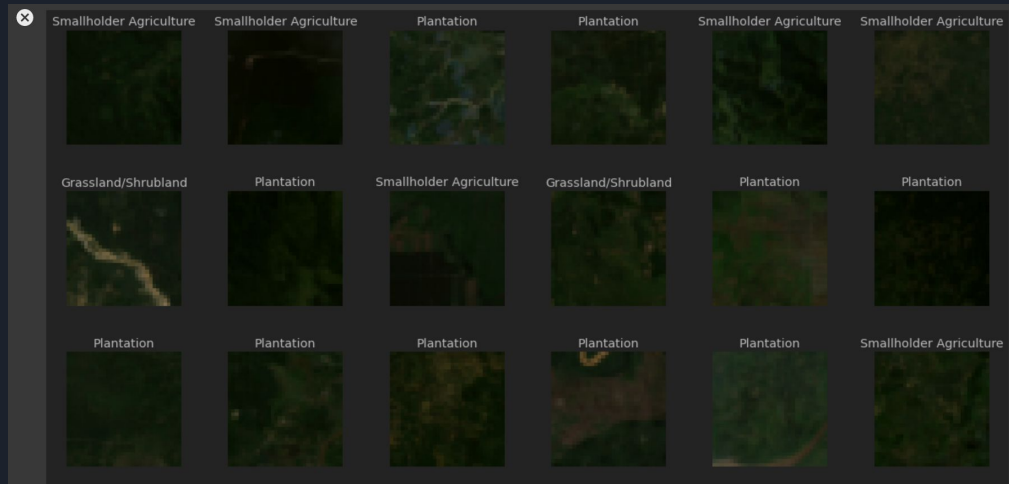
We delivered a json file with our predictions and evaluated the f1 score.

In the following slides, we will show our results.

How we have done it

Visualizing the data: A very important part of solving the problem is visualizing and understanding the data. During our program, we constantly printed grids to show us the different kinds of image manipulation that we did.

We decided to resize our images from 333 x 333 to 32 by 32 to reduce the amount of parameters that we had to deal with during the training of our CNN. A big deal for us was figuring out that the data was imbalanced so we took that into consideration, which really helped our model.

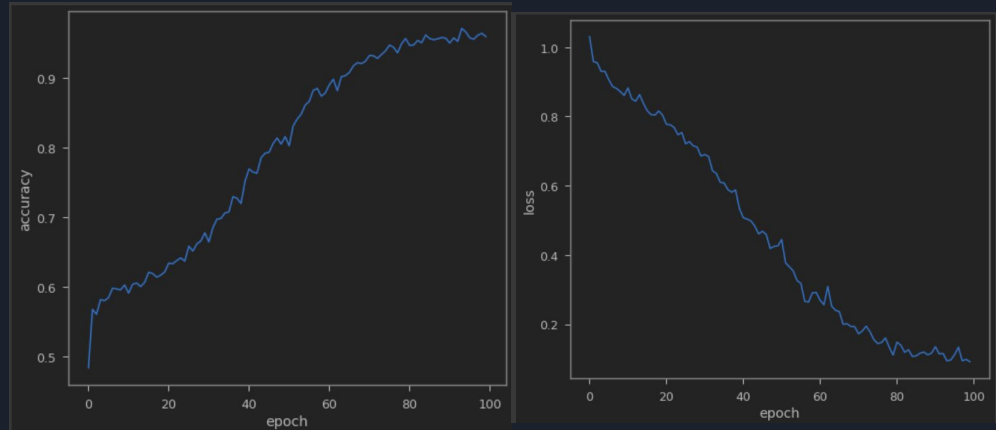


Convolutional Model

We used TensorFlow to create a Convolutional Neural Network model with hidden layers that will.

Our model had over 2,700,000 different parameters and we trained it for 100 epochs.

Below are our metrics. Thank you!



	precision	recall	f1-score	support
0	0.55	0.61	0.58	88
1	0.67	0.65	0.66	72
2	0.45	0.40	0.42	78
accuracy			0.55	238
macro avg	0.56	0.55	0.55	238
weighted avg	0.55	0.55	0.55	238

```
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Total params: 2,757,667
Trainable params: 2,757,667
Non-trainable params: 0
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```