Schneider Electric European Hackaton

Data Science competition

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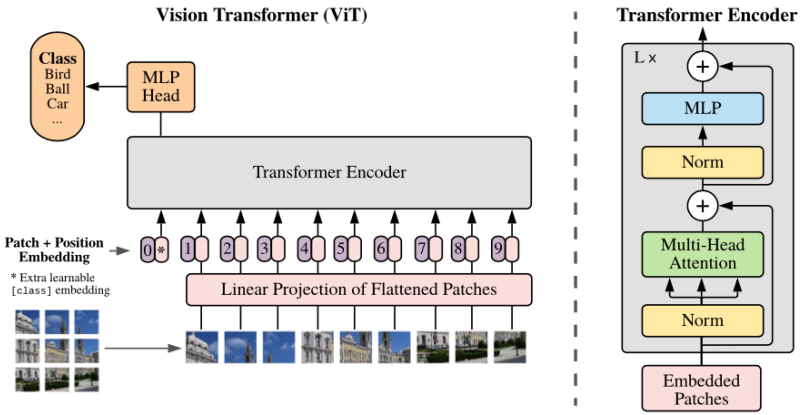
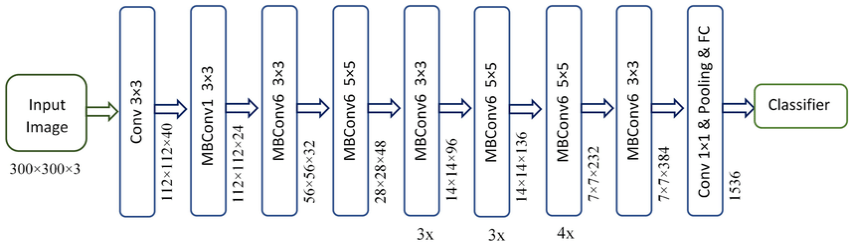
Models

Vision Transformer (ViT):



Efficient Net B3:



Data preprocessing and fine tunning

Visual Transformer:

- We have implemented our function to do Rotation, Saturation, Contrast and Brightness data augmentation.

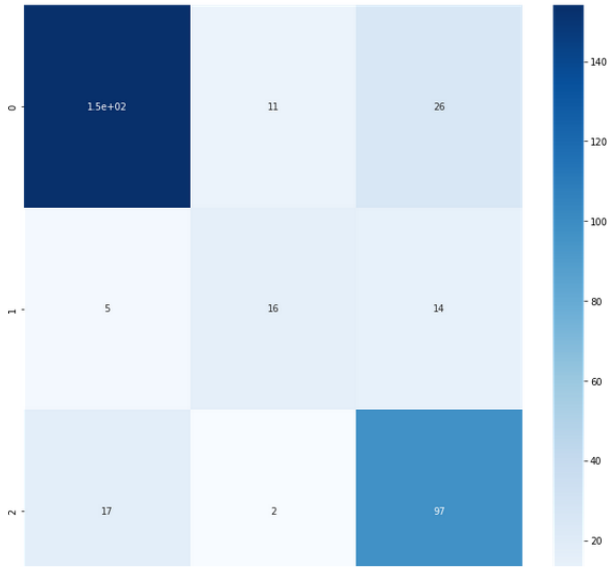
Efficient Net:

- Pixel reescaling and image resizing included in Efficient Net.
- Keras layers of data augmentation (Rotation,Brightness, Contrast...).
- Add dropout layers.
- Cosine decay learning rate.
- Early stopping returning the best weights.

For the Efficient Net we saw that the Data augmentations was not improving the results so we decided to remove it in order to improve the time execution.

Results

To reduce possible overfitting, variance and enhance our outcome we have done a **blended model**. In our case, it combines different fine-tuned **Transformers** and **Efficient Nets**.



	precision	recall	f1-score	support
0	0.89	0.81	0.85	191
1	0.61	0.54	0.58	35
2	0.70	0.83	0.76	116
accuracy			0.79	342
macro avg	0.73	0.73	0.73	342
weighted avg	0.80	0.79	0.79	342

Closing remarks

- Successfully implemented a **Visual Transformer** and an **Efficient Net** using transfer learning, some of the State-of-the-Arts models.
- Successfully implemented typical **data augmentation** tweaks onto images.
- Successfully implemented a **blended** model which helps to reduce variance and reforce our predictions.
- Overall, we ended up with very **good results**, even though they might be improved with balancing techniques or more complex data augmentation algorithms.