I

Team Name

NOHTYP

SCHNEIDER ELECTRIC EUROPEAN HACKATHON

Inês Magessi Mariana Rodrigues Pedro Fernandes

II

Data Augmentation

To improve our model's performance, we performed data augmentation on the train set.

The augmented images include transformations such as:

- normalization
- scaling
- rotation
- width and height shift
- horizontal flip
- zoom
- brightness transformations.

Modeling: Transfer Learning - Resnet50:

III

RESNETS

Made by stacking these residual blocks together.

Solve the problem of vanishing/exploding gradient descent

ResNet architecture introduced the concept called **Residual Blocks.**
We use a technique called skip connections.
The skip connection connects activations of a layer to further layers by skipping some layers in between.

RESNET50 model from tensorFlow

We have frozen the convolutional layers and then added two Dense layers: the first with 512 neurons + ReLu activation function and the second with 3 neurons + softmax activation.

Compile the model:

Using the Adam optimizer with initial learning rate 0.001 and used the categorical cross entropy loss given that the outputs are non binary discrete values.

After that, we trained the last layers of the model (about 1M parameters) with a batch size of 32.

IV

Conclusion

The augmented images include transformations such as:

- Normalization, scaling, rotation, width and height shift, horizontal flip, zoom, and brightness transformations.

During the day we tried multiple approaches to preprocess the images including:

- Visualizing bands,
- OpenCV Canny
- Sobel transformations.

For these reasons, we believe that preprocessing the images is one of the most essential aspects to solve the problem and without this phase completed the model stabilizes with accuracy values around 0.6.