Assignment: Transfer Learning on Intel Image Classification

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1 Dataset

The chosen dataset is called Intel® Image Classification and it was initially published on Analytics Vidhya by Intel® to host an image classification challenge to promote OpenVINO™, a toolkit or optimizing and deploying AI inference [1][2].

The dataset contains images of natural scenes around the world and they belong to 6 classes: buildings, forests, glaciers, mountains, sea and streets. The images are of size 150×150px and can be colored (3 channels, RGB) or rarely in grayscale (still with 3 channels). Figure 1 shows 16 entries of the training dataset.

There is a total of $\sim$ 24 000 images, divided into Train ($\sim$ 14 000), Test ($\sim$ 3 000) and Prediction ($\sim$ 7 000) folders. The last one does not contain labels and it is intended for unsupervised learning and it will be ignored in this work.

Figure 1: 16 random entries of the train dataset

The distribution of the images across the classes follows a uniform distribution $U(\mu, \sigma)$: in the train set each class has an average $\mu = 2\,339$ images with $\sigma = 105.45$ and in the test set $\mu = 500$ and $\sigma = 36.92$. We didn't find any bias inside the dataset since all the classes are equally populated and so we didn't applied any kind of data augmentation on particular classes for rebalacing.

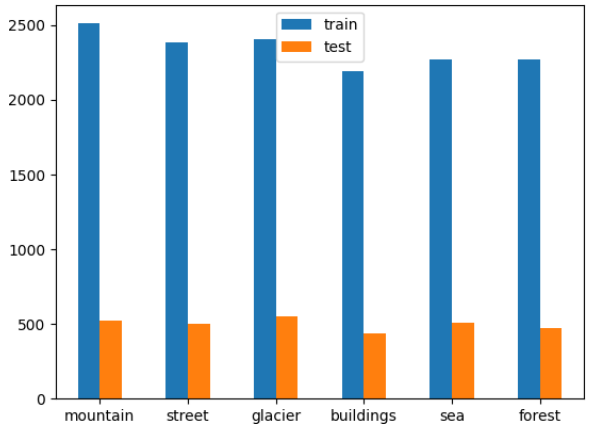

Figure 2: 16 entries of the train dataset

The 6 classes are encoded with numbers 0 to 5 and Table 1 shows the mapping between the numerical and nominative form.

Number	Class
0	Building
1	Forest
2	Glacier
3	Mountain
4	Sea
5	Street

Table 1: Mapping between numbers and names

References

[1] Practice Problem: Intel Scene Classification Challenge
`https://datahack.analyticsvidhya.com/contest/practice-problem-intel-`
[2] OpenVINO™ documentation
`https://docs.openvino.ai/latest/index.html`