Capstone Project #2 – Proposal

Classifying Nature Pictures

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1. Problem:

Image classification is one of the most popular areas in the last decade. There are many developing areas that needs AI implementations in order to recognize the environmental images. For instance; unmanned vehicles need maximum possible accuracy to render their environmental obstacles. In my project I want to classify nature pictures with high accuracy and find ways to improve the accuracy. That will contribute future models as well as training of future data scientists. The objective of this project is as defined below.

- According to given dataset, to build neural network model to predict randomly chosen nature pictures under six classes.
- To find possible ways to improve the accuracy of model.
- To give a general picture of accuracy for the test set.

2. Client:

This work possibly contributes data science trainings as well as web-based photography sites classification. To expect any kind of contribution for unmanned systems would be exaggerated expectation. It can be developed for further future work for the urban areas.

3. Data:

The context of the data includes image data of Natural Scenes around the world. Photographs were collected from Jan Bottinger who is a German photographer and traveller. He publishes his photographs publicly on Unsplash web portal. The Train, Test and Prediction data is separated in each zip files. There are around 14k images in Train, 3k in Test and 7k in Prediction.

This data was initially published on https://datahack.analyticsvidhya.com by Intel to host an Image Classification Challenge. This data contains around 25k images of size 150x150 distributed under 6 categories. {'buildings' -> 0, 'forest' -> 1, 'glacier' -> 2, 'mountain' -> 3, 'sea' -> 4, 'street' -> 5}

4. Methodology:

As the methodology I will use the steps below:

1. Firstly, we'll import usefull packages.
2. Then, we'll load the data, before visualize and preprocess it.
3. We'll try a simple CNN model and then we will evaluate its performances.
4. And finally, we'll use techniques such as data augmentation, learning rate decay and dropout to increase our model's accuracy.

5. Deliverables:

This analysis will be presented as a report explaining the process and results. Additional information including raw data, codes and ML model will be stored on a GitHub repository.