

Scene Classification

Problem Statement

Computer Vision, a field in Computer Science, which aims to replicate the complex human vision system can today be found surpassing the humans. Thanks to the incessant advancement in Deep Learning and Neural Networks. This field has created wide range of applications, one of which is - ability to classify Scenes around the world. We, the members of Group 6, are looking forward to solving this problem of classifying the Scenes whose application diverges from organizing photos in Smartphones to Tourism Planning, a sector which could drive a country's economy.

Dataset and Framework

Dataset for the project is obtained from Kaggle. There is a total of 25,000 images, captured by Jan Bottinger, out of which 17,000 are labelled. The six class labels are – Buildings, Forest, Glacier, Mountain, Sea and Street. Considering the nature of this classification problem, we believe data size is decent enough to train a deep network.

We will be using standard form of Convolution Neural Network (CNN) to solve this problem. Keeping size of the data and simplicity in mind we are looking forward to use Keras Framework to create the CNN model. We will also be experimenting with TensorFlow Framework to take advantage of the flexibility it offers while creating the model.

Reference Material

Primary:

MathWorks. "Train Deep Learning Network to Classify New Images". <https://www.mathworks.com/help/deeplearning/examples/train-deep-learning-network-to-classify-new-images.html>

Secondary:

MathWorks. "Scene Classification using Deep Learning". <https://medium.com/mathworks/scene-classification-using-deep-learning-853c64318f6b>

Performance Measure

Since the dataset is balanced, we will be using accuracy to measure the performance of the model. Additionally, Cohen Kappa and F1 Score will also be measured. In order to measure how our model performs on each class label, we will also keep an eye on the confusion matrix.

Rough Schedule

Week 1: Explore dataset; Finalize the structure of model

Week 2: Train model; Work on evaluation criteria

Week 3: Analyze the results; Make necessary amendments

Week 4: Prepare reports and PPT