Image Classification

New Attempt

Due May 6 by 11:59pm **Points** 5 **Submitting** a file upload

Build a CNN based image classifier, train and test the model using the following dataset. You can download the Intel Image Classification dataset at: **Kaggle (https://www.kaggle.com/puneet6060/intel-image-classification/data#)** .

Dataset:

1. This is image data of Natural Scenes around the world.
2. 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 }

The Train, Test and Prediction data are separated in zip files. There are around 14k images in Train, 3k in Test, and 7k in Prediction.

Tasks

1. Describe the CNN model of the classification. You need to describe each layer including activation functions, filters, pooling function etc. Give a visualization of your model. The classifier needs to classify each image as one of the 6 categories: building, forest, glacier, mountain, sea, street.
2. The python code of the classification implementation and validation.
3. 10 fold cross-validation results, including a confusion matrix for the final result.
4. Build another classifier based on transfer learning of a pretrained model such as AlexNet. Compare the classification performance to the previous classifier you built. Describe the transfer learning process.
5. Submit code and project report that answers the above four questions including test results and visualizations.