SUPER DATASCIENCE
MAKING THE COMPLEX SIMPLE

WORKSHOP 040 [Python] Highway Traffic Classification using Neural Networks

Difficulty Level: 2 of 3

Dataset: http://visal.cs.cityu.edu.hk/downloads/ has a highway traffic dataset. The video was taken over two days from a stationary camera overlooking I-5 in Seattle, WA. The video were labeled manually as light, medium, and heavy traffic, which correspond respectively to free-flowing traffic, traffic at reduced speed, and stopped or very slow speed traffic. There are 254 videos.

The dataset we will be working on is adapted from this where the videos have been converted into images by extracting the frames and creating 4 evaluation sets containing training and test images. Care has been taken where the frames from a training and test videos have not been mixed. (I.e there are no frames from a training video in the test set and vice-versa)

Each evaluation set has a train and test directory where the frames have been stored in folders named 0,1,2 (0-light traffic, 1-medium traffic and 2-heavy traffic)

Challenge:

Develop a Neural Network model to classify this data best as possible (Aim for above 90% accuracy) . You may use CNNs, ANNs, or even a combination of CNNs and ANNs. You can also use CNNs pre-trained in imagenet available in Keras.

The best solutions are always the simplest.

I recommend you to start thinking about the problem, the data, the class-distribution of the data, etc before you jump in and code.