TSC Lite – A lightweight & powerful traffic sign classifier

Brief:

Our model employs a deep learning based solution to identify traffic signs which can be used in autonomous driving. An intelligent traffic sign identification system ensures good road safety.

Features and Benefits:

1. Usually, classification models are used on static images but using OpenCV we have enabled it to take live feed from camera and perform classification. **This is indeed a very new approach when it comes to using classifiers.**
2. It is extremely **light weight model so it requires very less computational resources** (not even a single GPU). This is extremely useful if the technology is to be mounted on vehicles where it isn't possible to employ too much hardware.
3. Despite its small size, our model has **97%+ accuracy and it can be trained without hardware acceleration.**

About our Model:

Our model is primarily based on LeNet architecture and we tweaked it a bit to reach optimum performance. We achieved over 97% accuracy in training and **it classifies signs in the video with near perfect accuracy**. We had used the German Traffic Signs dataset for training.

Optimization using OpenVINO Toolkit:

We used OpenVINO Model Optimizer to reduce the size of our model **(36 ->19 nodes)**. Though it did not make much difference in the accuracy, we managed to get **a slight boost in the speed**. The difference isn't that noticeable due to the fact that our model is already small and fast.

PS: We used a webcam for input feed and the frame rate is limited by the video (we managed up to 35fps).

Take a look at the entire implementation here!