Traffic Sign Classification Project Report

Data Set Summary & Exploration

The data is being explored in cell number 3.

Number of training examples = 34799
Number of testing examples = 12630
Image data shape = (32, 32, 3)
Number of classes = 43

Function to visualize the dataset is defined in IPython netbook cell no:4. It is called in cell Number 8.

Describe how, and identify where in your code, you set up training, validation and testing data. How much data was in each set? Explain what techniques were used to split the data into these sets.

The provided training data is 34799 images. For every image we augment two more i mages with various transformations like rotation, translation ,brightness augmentatio n etc. This makes the total training set as 104397 images.

Number of validation images(as provided): 4410
Number of test images(as provided): 12630

IPython notebook cell number 5,6,7 are used for augmenting training data.

Model Description:

I Implemented LeNet Model with following layers:

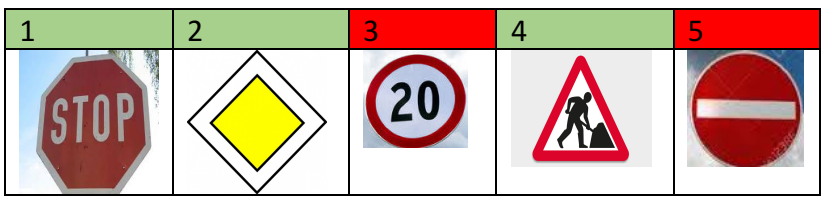
Layer	Description
Convolution Layer 1	Input = 32x32x1. Output = 14x14x6
RELU	
Max Pooling	
Convolution Layer 2	Input = 14x14x6. Output = 5x5x16
RELU	
Max Pooling	
Fully Connected Layer 1	Input = 400. Output = 120
RELU	
Fully Connected Layer 2	Input = 120. Output = 84
RELU	
Fully Connected Layer 3	Input = 84. Output = 43

Optimizer: AdamOptimizer
Batch Size: 256
Epochs: 200
Learning Rate: .001

My final model results were:

- **Training set accuracy of : 99.8%**
- **validation set accuracy of :92%**
- **test set accuracy of 89.5%**

New Test Images from Web:



New Test Data Accuracy = 0.600
Image with green background is correctly predicted while red background is wrongly predicted.