Traffic Sign Classifier Report

We are using CNN to classify the traffic sign.

- **Preprocess data**
  The data is converted GRAY image to avoid color bias.

- **Balance data**
  The input training data is biased to certain traffic sign. Balance data step will make all class have the same number of examples by duplicating the existing example.

We are using 5 layer Convolutional Neural network.

1. Convolutional.
   - Filter layer :Input = 32x32x1. Output = 28x28x6.
   - Relu activation layer
   - Pooling layer Input = 28x28x6. Output = 14x14x6.
2. Convolutional
   - Filter layer Input = 14x14x6. Output = 10x10x32.
   - Relu activation layer
   - Pooling layer Input = 10x10x32. Output = 5x5x32
   - Fatten layer Input = 5x5x32. Output = 800.
3. Fully connected Input = 120. Output = 84.
   - Relu activation layer
   - Dropout layer 0.5 keep rate
4. Fully connected Input = 120. Output = 84.
   - Relu activation layer
   - Dropout layer 0.5 keep rate
5. Fully connected Input = 84. Output = 10.

With this we are able to archive 95% -96% validation accuracy.

It is able to test on new image and predict the correct image. Detail in jupyter notebook