

Traffic Sign Classification Project

Data Augmentation:

- Augment the existing data by adding some additional samples

Preprocessing:

- Convert to Gray Scale
- Flip left/right
- Change brightness & contrast
- TODO: Try other techniques like
 - Crop image
 - Shear
 - Rotation

Model Architecture:

I used LeNet architecture with 2 layers of convolution, Leaky RELU activations, Max Pooling and Dropout followed by 3 'Fully Connected' layers.

Layer 1:

- Convolution
 - Filter Size: 5x5x32
 - Strides: 2x2
 - Padding: VALID
- Leaky RELU
 - Alpha = 0.5
- Max Pooling
 - ksize: [1, 2, 2, 1]
 - strides: [1, 2, 2, 1]
- Dropout
 - Probability = 0.5

Layer 2:

- Convolution
 - Filter Size: 5x5x64
 - Strides: 2x2
 - Padding: VALID
- Leaky RELU
 - Alpha = 0.5
- Max Pooling
 - ksize: [1, 2, 2, 1]
 - strides: [1, 2, 2, 1]
- Dropout
 - Probability = 0.5

Fully Connected Layer 1:

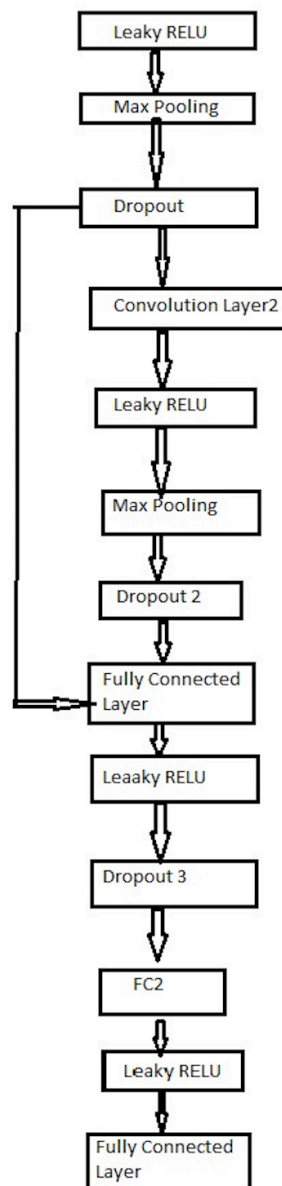
- Added flattened outputs from layers 1 & 2
- Matrix Multiplication
- Leaky RELU
 - Alpha = 0.5
- Dropout
 - Probability = 0.5

Fully Connected Layer 2:

- Matrix Multiplication
- Leaky RELU
 - Alpha = 0.5

Fully Connected Layer 3:

- Matrix Multiplication



Model Training:

learning_rate = 0.0005

epochs = 100

batch_size = 128

L2 lambda = 0.0001

- Used softmax as well as L2 regularization to determine the loss
- Used AdamOptimizer for minimizing the loss