**Assignment - 3** (Neuro-Fuzzy using keras)

1. **Topic**: Traffic-Sign-Detection

2. **Architecture**: Keras Sequential Model with sparse\_categorical\_crossentropy loss function

and adam Optimiser with 2 hidden layers - 900 x (640 x 256) x 16

3. **Pre-Processing**: Converting the 30x30 image to gray scale and taking every pixel as input

in npArray (applied Gaussian blur for reducing the misclassification).

4. **Dataset**: 270 images for Training and 80 Images for Testing each of size 30x30

5. **Analysis**: When it comes to similar images like “No Parking” and “No Left turn” the network is not able to classify between them. For that we can increase the image size.

**Fuzzy**: In Fuzzy we have make classification like “**Strong**” and “**Might be misclassified**” by if conditions and membership values of each image to a particular class (And by this we are able to increase the accuracy by around 8 - 10 %). We tried to apply gaussian filter to a particular classes to avoid misclassification

a. **Classes**: 16 Classes

b. **Accuracy**: Around 75 - 80%

c. **Iterations**: 100 - 150 iterations.

d. **For improvement in accuracy:** We can add more hidden layers in network model. Can increase the clarity in image, input size. Changing activation function according to input size.