Pattern recognition plays an important role in the area of Digital image processing. Identifying or classifying an input image as the desired pattern class is a challenging task. The pattern may be an image, text in an image, characters, symbols, etc. Representation and classification of pattern classes are the major issues to be considered in character recognition. Recognition of characters from vehicle number plate is one such field that receives a major attention. Vehicle number plate recognition technique plays a very vital role in the modern era. In this research work, three different methods are proposed to achieve better recognition accuracy. The methods include the concept of Grouping and ungrouping, Multiclass SVM classifier containing 36 classes and the neuro fuzzy classifier.

The first method, recognition of Arabic numerals with Grouping and Ungrouping using Back propagation neural network, recognizes individual characters. Handwritten numeral recognition is one of the bench mark problem in Pattern recognition and Artificial Intelligence. The proposed method investigates handwritten Arabic numerals. Although the pattern of 0-9 is the same as in Indian numeral system, the glyphs vary for each numeral in Arabic. The proposed method includes preprocessing of digitized handwritten image, training of BPNN and recognition phase. Sample handwritten images are tested with the proposed method and the results are plotted. The accuracy value is computed based on receiver operating characteristics and the confusion matrix.

The second method, recognition of characters from vehicle number plate images uses morphology based compound operation and Multiclass SVM containing 36 classes, the third method uses neuro fuzzy classifier to recognize characters from vehicle number plate images.

The third method introduces a neuro fuzzy classifier for the recognition of characters from vehicle number plate images. Initially, the given image is converted into a gray scale image. The feature extraction process is carried out using bi-partitioning technique. Subsequently, clustering is performed over the partitioned image with the help of modified fuzzy C means clustering algorithm. The performance of the proposed method was compared with other existing methods such as, K-NN, Artificial neural network and the Fuzzy classifier. All the three methods were implemented with Matlab 7.12.0.635(R2011a). Results are tabulated and plotted.