

Abstract

The number of vehicles on roads continually increases, increasing traffic congestion and issues in urban areas. Factors such as population expansion, urbanization, economic development, and the increasing number of automobiles drive this increase in road transport. The increase in vehicle numbers has led to increased accidents and infractions of traffic laws. In some circumstances, traffic officers are overwhelmed, making it difficult to regulate and control traffic flow efficiently. This study aims to automate the recognition of vehicle details, such as number plate detection and character recognition. Implementing such automated systems is possible to minimize human errors and workload dramatically. Furthermore, these technologies can help to improve road safety and traffic management by effectively enforcing harsh traffic laws.

The objectives of this study are as follows:

- Detecting the number plate.
- Recognizing the characters of the number plate.
- Fetching various details regarding the detected number plate.

The character image datasets required to train the model are collected from the website. The actual vehicle image and vehicle information for validation and testing of the system is gathered from the willing people to reveal the information. The character images dataset builds the Convolutional Neural Network(CNN) model to recognize the characters. The system will give the vehicle information, such as the owner's name, registration date, district, state, vehicle type, fuel type, PUC details, and insurance details.