APPLICATION ASSIGNMENT

Automatic number plate recognition and authentication system for vehicle identification

Group 27

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1 Motivation

It is widely known and documented that traffic Law enforcement and security violation are one of the major issues persisting in India today. Statistics gathered by National Crime Record Bureau in the year 2017 conclude that daily almost 120 vehicles are stolen in just the capital city of India, New Delhi. The country faces more than 600 security and traffic rule violation complaints daily per 100,000 inhabitants which is a huge number. Apart from this, lack of proper security arrangements in highly restricted areas such as Military Bases, Government Offices, Parliament, etc. has led to many cases of tresspassing and in the worst case, even terrorist attacks in previous years.

2 Overview

With the increase in tresspassing, accidents and traffic rule violations, there is a growing need for a system to automatically record and help maintain the perfect check on the vehicles passing. The Objective of this Assignment is hence to design an efficient automatic authorized vehicle identification system by using the vehicle number plate through digital signal processing and "Make in India" initiative, which can be installed in high security Military areas, Government or Private Offices, etc for an authorized entry system and also in various strategic points such as traffic signals and toll booths for authentification of vehicles for the purpose of traffic rule enforcement such as speed violation, tax collection, identification of stolen cars, etc.

3 Goals

The goals we aim to achieve through this product are:

- Instantaneous vehicle identification through the vehicle number extraction
- Development of a security authentication system based on varied security criteria

4 Milestones

The following are the major milestones we aim to achieve through the course of this assignment:

- **Image Capturing System :** The first milestone would be to design a hardware control system that uses a physical signal and a transducer to detect the arrival of a vehicle.

- **Vehicle number extraction :** The aim of this part of the project would be to construct an algorithm through which the characters of the numberplate will be read by the system and the system will be simulated in MATLAB using real data images.

- **Authentication System :** The extracted number will be used as a part of an Authentication system that would check the access permission of the particular vehicle given some authentication criteria. It would, in totality, perform operations like character matching from a database, condition evaluation, etc. using the vehicle number extracted.