PROJECT SYNOPSIS

**Moving vehicle registration plate detection and unauthorized vehicle detection in secure premises**

Moving vehicle registration plate detection is an image processing innovation task that checks the legitimacy of the vehicle by using the vehicle's registered number plate and radio frequency identification (RFID) as well as it also helps to detect the unauthorized vehicle in secure premises. The goal is to match the details of the RFID tag to the vehicle registration number plate in order to plan a vehicle distinguishing proof structure that has been approved by the manufacturing programme.

It may be possible that two vehicles exchange registration plates for nefarious reasons, such as theft or forgery, which can be difficult to identify. Also keeping logs of vehicles who enter and exit the compound becomes very important, in case of tracking runaway vehicles.

The main objective is to extract the vehicle registration number from the number plate which we capture by the webcam with the help of a deep learning based OCR model and then match it with the RFID tag in order to plan a vehicle distinguishing proof structure that has been approved by the authority. An organization's entry and exit point's security will be implemented by using this framework.

In order to process a vehicle, we need to gather some information regarding it. This can be done by scanning the number plate as well as the RFID Tag of the vehicle. From CCTV camera feeds we can capture still frames of a vehicle no. plate and apply some image pre-processing techniques like removal of blur, edge detection, contour detection and eventually segregate the vehicle's license no from its registration plate. This can be done using a deep learning-based OCR library. From RFID scanners we can scan the RFID tag which is unique to every vehicle. Then we can cross-check whether the license no. associated with the given RFID tag matches the license no. generated by OCR, therefore verifying the authenticity of the vehicle. We can also store the date and time, RFID details and the registration number of the vehicle in a database to keep a log of the vehicle.

We develop a custom trained model *by* various types of images of registration plate which can recognize the registration plate from each and every frame and this model is a universal model and can run in every platform. This model consists Darknet and YOLO. Then by using openCV, numpy and other python libraries we can detect registration plate from live CCTV footage or from any recorded video footage. Next we develop a deep learning based OCR technique to extract the registration number as a string from the number plate of the moving vehicle.

We want to improve our system by which extract the vehicle information in case of highly polluted area or any place where visibility is poor. This technology can be implemented where privacy and security need to maintain properly. We can prevent to entry or exit unauthorised vehicle. If a car is stolen, an authorized user should log a report into the server, and a network of RFID scanners installed in various check points, traffic signals, and toll plazas throughout the city will search for the reported tag. Once the necessary security system has been discovered, then we can implement this technology.