

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

“Jnana Sangama”, Belagavi – 590018.



A Project Synopsis on

Number Plate Recognition (NPR) Using Image Processing Technology

Submitted in partial fulfillment for the requirement of 8th semester for the

**Degree of Bachelor of Engineering in
INFORMATION SCIENCE & ENGINEERING**

For the Academic Year 2022-23

SUBMITTED BY_

Abhishek Chaudhary (1DB19IS003)

Akhilesh (1DB19IS004)

Hasan Raihan (1DB19IS030)

Neel Mitesh Patel (1DB19IS054)

Under the guidance of:

Mrs. Roopashree M S

Assistant Professor,

Dept. of ISE



DON BOSCO INSTITUTE OF TECHNOLOGY, BENGALURU-560074

2022-23

SYNOPSIS

College	Don Bosco Institute of Technology
Department	Information Science and Engineering
Course : B.E	Information Science and Engineering
Name of the Students and USN	Abhishek Chaudhary (1DB19IS003) Akhilesh (1DB19IS004) Hasan Raihan (1DB19IS030) Neel Mitesh Patel (1DB19IS054)
Project Title	Number Plate Recognition (NPR) using image processing technology
Under taken at	Don Bosco Institute of Technology
Guide	Name: Mrs. Roopashree M S Designation: Assistant Professor Signature:

Abstract:

In a metropolis full of traffic recognizing license plates has become a very laborious task. The proposed project deals with a Concept capable of automatically tracking license plates and verifying their legitimacy. This project will use the latest YOLO object detection algorithm and deep learning model. A dedicated camera will be installed at a junction to record real-time images of passing vehicles. This will be given as input to the object detection algorithm, extracting the bounding box from the license plate and raw attributes such as vehicle type and color the optical character recognition system filters the numbers and the characters that appear on the license plate. This data is inserted into a local database along with other metadata such as where the photo was taken and the timestamp. This database is migrated to the cloud, where the Map Reduce function runs, comparing it to a local database created elsewhere to identify discrepancies to be found, and to identify temporary discrepancies specific to duplicate license plates. It also does type-checking, cross-validation, and other things. Once these vehicles are located, they are tracked by road mounted traffic cameras and sent to local authorities who can take further appropriate action related to the violation.

TITLE:

Number Plate Recognition (NPR) using image processing technology

AIM:

The aim of this project is to develop a system for automatic number plate detection and recognition that can accurately identify and track vehicles in real-time.

OBJECTIVES:

- To design and develop an image processing algorithm that can accurately detect and extract number plates from images captured by surveillance cameras.
- To train a machine learning model to recognize characters on the number plates and convert them into text format.
- To integrate the number plate recognition system with a database of registered vehicles and generate alerts for any violations such as expired registration or stolen vehicles.
- To implement additional features such as bike and people detection, emission tests, and fake license plate detection to improve the system's accuracy and effectiveness.

METHODOLOGY:

Methodology 1: Reading and visualising images using OpenCV with Python

Methodology 2: Applying color shifts and changes to images

Methodology 3: Detecting contours using OpenCV find countours

Methodology 4: Masking number plates to improve text extraction for OCR

Methodology 5: Extracting number plate text using Easy OCR

EXPECTED OUTCOME:

The system uses a sequence of image processing techniques for recognizing the vehicle from the database stored on the system. The system is implemented in the MATLAB platform and its performance is tested on real license plate images. The simulation output display that the system vigorously detects and identifies the vehicle using a license number plate against different lighting situations and can be implemented at the entrance of a highly restricted area. The system works adequately for wide variations in illumination circumstances and various types of number plates commonly found in India. It is a great replacement to the existing proprietary systems, even though there are some restrictions with high resolution to detect the number plate using OpenCV.

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