# VISVESVARAYA TECHNOLOGICAL

# UNIVERSITY

**Jnana Sangama, Belagavi-590018**



## COMPUTER GRAPHICS AND IMAGE PROCESSING LAB WITH MINI PROJECT

## A MINI PROJECT SYNOPSIS ON

**‘‘Recognition of License Plate through Computer Vision(OPEN CV**)**’’**

## 

## BACHELOR OF ENGINEERING IN

**COMPUTER SCIENCE AND ENGINEERING**

### For the Academic Year 2024-2025

Submitted by

**PRATIKSHA P (3BK21CS037)**

PROJECT GUIDE

PROF. KEERTI RANI



### DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING BASAVAKALYAN ENGINEERING COLLEGE BASAVAKAYLAN

**[Affiliated to VTU,Belgavi,Approved by AICTE,New Delhi]**

**ABSTRACT**

The automatic recognition of vehicle license plates is a crucial aspect of modern traffic management and surveillance systems. This mini-project focuses on the development of a License Plate Recognition (LPR) system using OpenCV, a widely-used open-source computer vision library. The primary objective is to accurately detect and recognize license plates from images or video streams in real-time.

The project involves several key steps: image acquisition, pre-processing, license plate detection. Initially, the system captures images or frames from a video feed.

For license plate detection, contour detection and morphological operations are employed to locate the rectangular regions that potentially contain license plates. Once a license plate is detected, the system isolates the characters using segmentation techniques. The final step involves recognizing the segmented characters using OCR algorithms, converting them into readable text.

The effectiveness of the LPR system is evaluated based on its accuracy, speed, and robustness under varying conditions such as different lighting, angles, and distances. This project demonstrates the feasibility of using OpenCV for real-time license plate recognition and provides a foundation for further enhancements and applications in automated toll collection, parking management, and law enforcement.

**HARDWARE AND SOFTWARE REQUIREMENTS**

**Hardware requirements:**

* **Processor**: A multi-core processor (Intel i5/i7 or AMD equivalent) is recommended to handle image processing tasks efficiently.
* **RAM**: At least 8 GB of RAM to ensure smooth operation and quick processing of images.
* **Storage**: A minimum of 256 GB SSD for faster read/write operations, which is beneficial when handling large datasets and installing necessary software.
* **Frame Rate**: A camera with a frame rate of 30 frames per second (fps) is ideal for real-time video processing.

**Software Requirements:**

* **Operating System**

The system can be developed on any major operating system, including Windows, macOS, or Linux. Ensure that your operating system is up to date to avoid compatibility issues with libraries and tools.

* **Programming Language**

Python: Python is the preferred programming language for this project due to its simplicity and the extensive range of libraries available for image processing and computer vision.

* **Development Platform**

IDE/Text Editor: An Integrated Development Environment (IDE) such as PyCharm, VSCode, or Jupyter Notebook is recommended for writing and debugging code.

* **Libraries and Framework**

OpenCV: OpenCV (Open Source Computer Vision Library) is essential for image processing and computer vision tasks.