**Personal Statement**

The License Plate Detection and OCR Application project began as an individual effort. While the course labs initially involved a teammate, he had to change courses midway, leaving me to continue the project alone. I took full responsibility for the design, development, and implementation of the entire application. I independently researched and applied various image processing techniques and OCR methods, such as CLAHE for contrast enhancement, Canny edge detection, and morphological operations to reduce noise. For the plate detection phase, I implemented region filtering based on aspect ratio and solidity, ensuring that the detected plates were accurate and reliable. Once the plates were detected, I applied preprocessing steps like adaptive thresholding and noise removal to improve the OCR accuracy.

A significant design decision I made was splitting the workflow into two distinct stages: license plate detection and OCR text extraction. Initially, I had tried combining both tasks in a single loop, but the results were unsatisfactory, with poor detection accuracy and noisy OCR outputs. By dividing the process into separate steps, I was able to achieve cleaner and more reliable results, and it also made debugging much easier.

**Reflection**  
This project helped me deepen my understanding of key concepts in image processing, such as contrast enhancement, edge detection, and morphological operations. I also learned how to optimize OCR, and the importance of breaking complex workflows into smaller, manageable tasks. One of the most valuable lessons I learned was the significance of writing clean, modular, and scalable code. By doing so, I was able to simplify the debugging process and ensure that the application could handle different stages of the workflow independently. If I had more time, I would have integrated machine learning models like CNNs, such as YOLOv5 or SSD, to improve the plate detection process, especially for handling plates with varying sizes, colors, and angles. I would have also liked to implement real-time detection from video feeds to make the system more practical.

This project has greatly enhanced my technical skills, and I am now more confident in tackling similar image processing and OCR tasks in the future.

Name: Danush

CID: 06034878