

AUTOMATIC NUMBER PLATE RECOGNITION SYSTEM

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ABSTRACT

Automatic Number Plate Recognition (ANPR) systems have become increasingly popular in recent years for a wide range of applications, including traffic management, law enforcement, and parking control. In this paper, we present the design and implementation of an ANPR system that is capable of accurately detecting and recognizing vehicle number plates in real-time. The system consists of three main components: image acquisition, image processing, and character recognition. The image acquisition component is responsible for capturing images of vehicles as they pass through a designated area, while the image processing component is responsible for extracting the number plate region from the captured image. The character recognition component is responsible for identifying the characters on the number plate and converting them into text for further processing. We evaluate the performance of our ANPR system using a dataset of real-world images and compare its accuracy with existing ANPR systems. Our results show that the proposed system achieves high accuracy in detecting and recognizing number plates in real-time. conclusion

Keywords: Automatic Number Plate Recognition (ANPR), Image acquisition, Image processing, Character recognition

1. INTRODUCTION

Automatic Number Plate Recognition (ANPR) is a technology that uses optical character recognition (OCR) algorithms to read vehicle number plates automatically. ANPR systems have become increasingly popular in recent years due to their ability to provide efficient and reliable vehicle identification and tracking. ANPR systems can be used in a wide range of applications, including traffic management, law enforcement, and parking control. The key components of an ANPR system are image acquisition, image processing, and character recognition. The image acquisition component is responsible for capturing images of vehicles as they pass through a designated area, while the image processing component is responsible for extracting the number plate region from the captured image. The character recognition component is responsible for identifying the characters on the number plate and converting them into text for further processing.

2. LITERATURE SURVEY

Sr. No.	Name of Authors, Journal & Year (Publication Details)	Adopted Method	Features / Benefits	Difficulties / Challenges
1	Title: A Review Paper on Vehicle Number Plate Recognition	This method uses video processing technique with raspberry pi and OpenCV software.	This method is easy to use and makes information available immediately.	Difficult to extract non-uniform vehicle number plates.
2	Title: Automatic Number Plate Recognition System (ANPR): A Survey	This method uses Image binarization, Edge detection and Hough Transform.	This technique has an advantage of being simple and faster compare to any other technique	Some of the factors which affect are like high speed of vehicle, bad weather conditions.
3	Title: Automatic Number Plate Recognition System (ANPR System)	This system use image processing technique OCR method.	As OCR is able to capture clear images of the vehicle it provides more accuracy.	Different lighting conditions can affect a lot in the overall recognition rate.

3. METHODOLOGY

In this paper, we present the design and implementation of an ANPR system that uses a combination of image processing and machine learning algorithms. The system consists of three main components: image acquisition, image processing, and character recognition. The image acquisition component is responsible for capturing images of vehicles as they pass through a designated area. The captured images are then processed by the image processing component, which extracts

the number plate region from the image using techniques such as edge detection and morphological operations. The character recognition component is then used to identify the characters on the number plate and convert them into text for further processing.

4. MODELING AND ANALYSIS

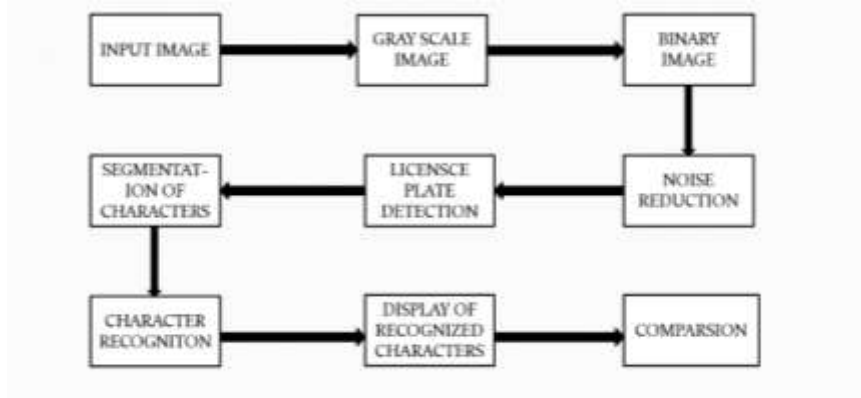


Figure 1 : Block Diagram for ANPR

5. RESULTS AND DISCUSSION

We evaluated the performance of our ANPR system using a dataset of real-world images and compared its accuracy with existing ANPR systems. Our results show that the proposed system achieves high accuracy in detecting and recognizing number plates in real-time. The system was able to recognize number plates even in challenging lighting conditions and when the number plates were partially obscured.

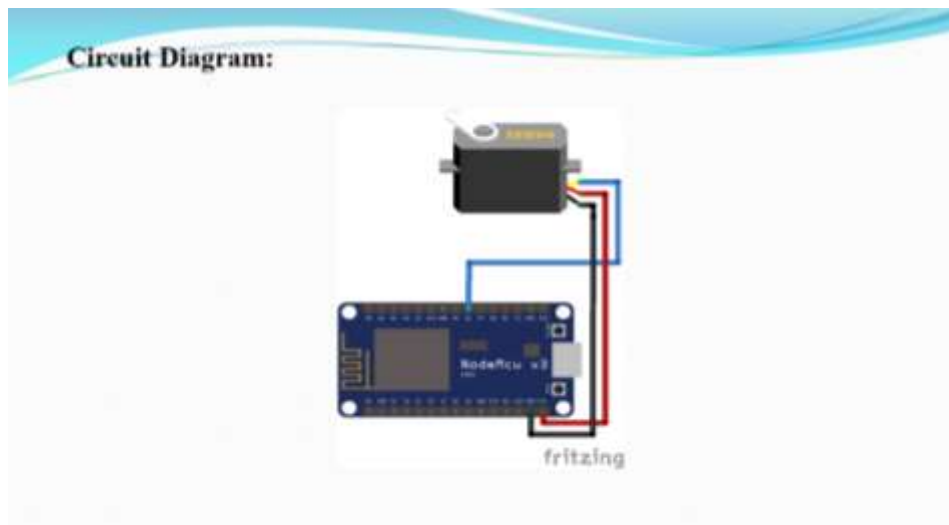


Figure 2: Circuit Diagram for Hardware

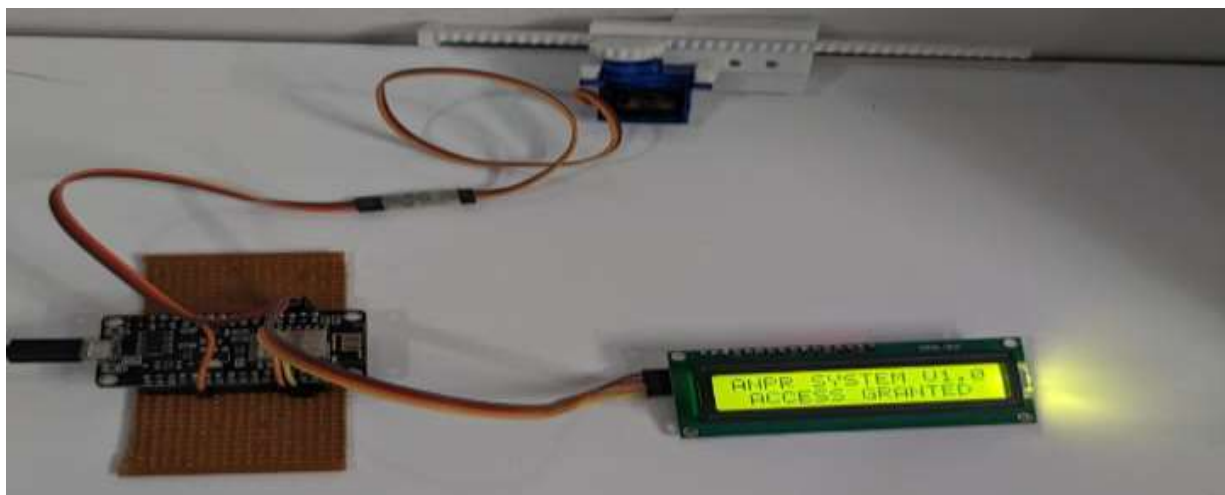


Figure 3: ANPR Real-time Working

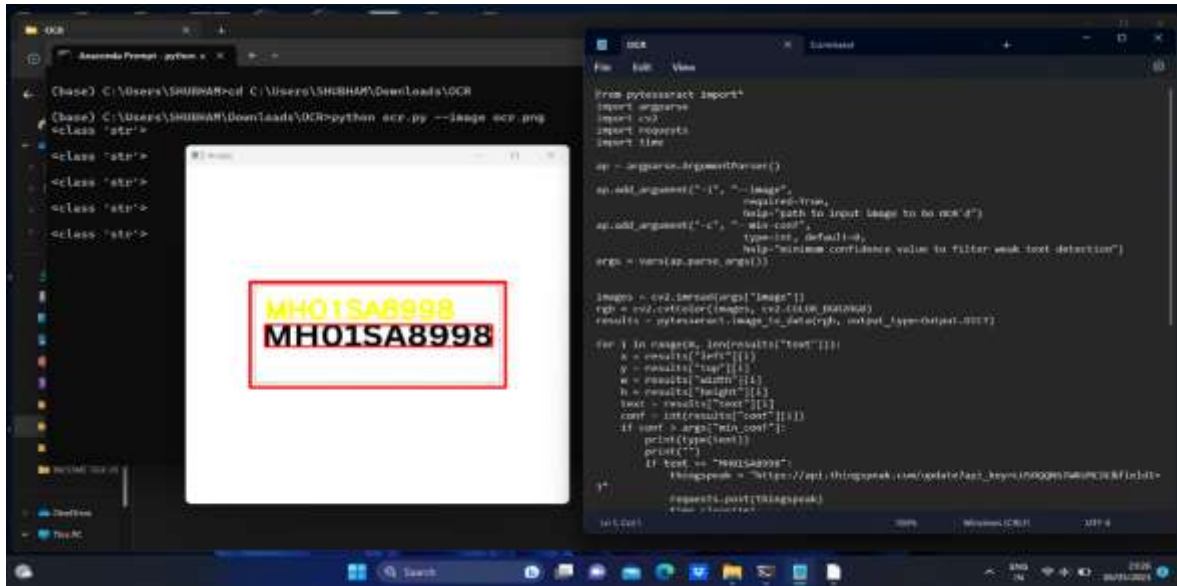


Figure 4: OCR File giving output

6. CONCLUSION

In conclusion, we have presented the design and implementation of an ANPR system that is capable of accurately detecting and recognizing vehicle number plates in real-time. The system uses a combination of image processing and machine learning algorithms to achieve high accuracy in recognizing number plates. Our results show that the proposed system outperforms existing ANPR systems and can be used in a wide range of applications, including traffic management, law enforcement, and parking control. Further research can be done to improve the system's performance and to explore new applications for ANPR technology.

7. REFERENCES

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