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NUMBER PLATE RECOGNITION SYSTEM USING PYTESSERACT & OPEN CV

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ABSTRACT

Automatic Number Plate Recognition (ANPR) could be a fairly well explored drawback with several winning solutions. However, these solutions area unit usually tuned towards a selected atmosphere thanks to the variations within the options of variety plates across the globe. Algorithms written for number plate recognition area unit supported these options and then a universal resolution would be troublesome to appreciate because the image analysis techniques that area unit accustomed build these algorithms cannot themselves boast hundred % accuracy. the main focus of this paper could be a planned formula that's optimized to figure with Ghanese vehicle variety plates. The formula, written in C++ with the OpenCV library, uses edge detection and have Detection techniques combined with mathematical morphology for locating the plate. The Tesseract OCR engine was then accustomed determine the detected characters on the plate

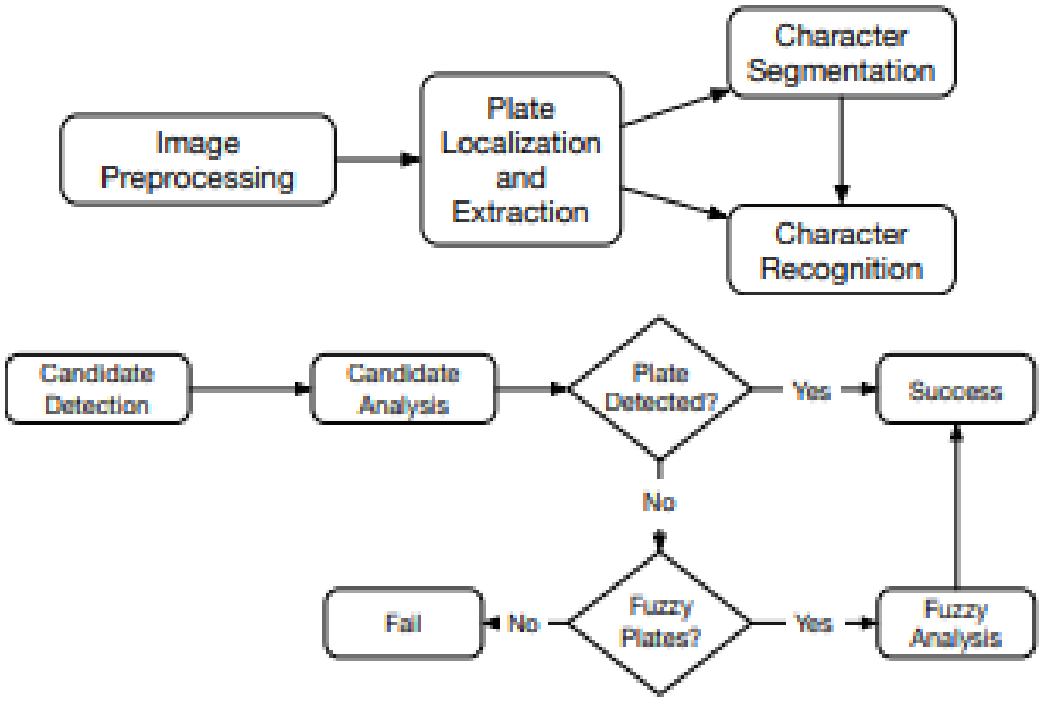
Keywords: Number Plate Recognition, Character Extraction, Image Processing.

I. INTRODUCTION

The Automatic Number Plate Recognition (ANPR) is one of the technologies implemented in ITSs to identify vehicles by capturing and extracting vehicle registration from their number plates using image processing techniques. ANPR was invented in 1976 by the United Kingdom police. The plate detection stage is the most important stage because if this fails it means complete failure of the algorithm. This depends on features that the number plate should have.

II. METHODOLOGY

The proposed ANPR system is made up of four blocks as shown in Figure. It is capable of using either Template matching combined to mathematical morphology to get the number plate from the input image. Character recognition is done by the open-source Pytessaract.



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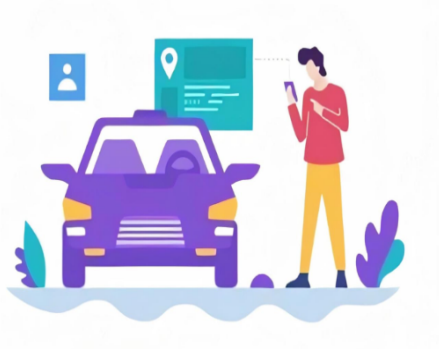
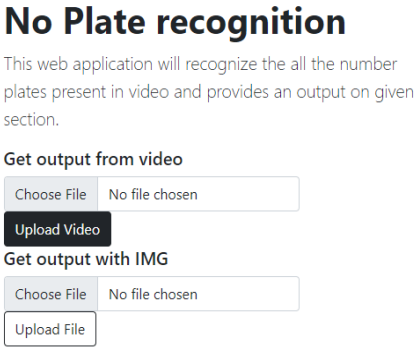
III. MODELING AND ANALYSIS

This critical process makes the final stage in the process. Here, the Pytesseract is applied to the detected plate to recognize the alphanumeric characters on it. To increase the accuracy of recognition, process the Tesseract engine used was modified. The Modification involved creating images of the characters to be recognized, using the expected fonts, and a dictionary of possible character combinations to be found on a number plate. The output of this is to represent vehicle number.

IV. RESULTS AND DISCUSSION

Five number plates were tested with the modified ANPR system to test its performance in terms accuracy of 10 results. The edge detection algorithm detected 397 plates all plates effectively. Feature detection was too slow, but had higher accuracy, detecting 454 plates. The optical character recognition successfully recognized about 60% of detected plates. Blur characters and unique number plate designed, with noise on the plates due to dirt, very much affected the plate segmentation process, which in return affected character recognition. Both plate detection algorithms proved accurate up to a distance of 5 meters. Feature Detection exhibited random successes with variations in view angle, while Edge Detection stayed accurate for a range of up to 30 degrees.





Output:-

{'Description': 'BMW X1 20D CKD', 'RegistrationYear': '2013', 'CarMake': {'CurrentTextValue': 'BMW'}, 'CarModel': {'CurrentTextValue': 'X1 20D CKD'}, 'Variant': 'X1 sDrive 20d Diesel 1995.0', 'EngineSize': {'CurrentTextValue': '1995.0'}, 'MakeDescription': {'CurrentTextValue': 'BMW'}, 'ModelDescription': {'CurrentTextValue': 'X1 20D CKD'}, 'NumberOfSeats': {'CurrentTextValue': '5'}, 'VechileIdentificationNumber': 'WBAVN97050VV10023', 'EngineNumber': '72758242', 'FuelType': {'CurrentTextValue': 'DIESEL'}, 'RegistrationDate': '26/08/2013', 'Owner': 'ISHWAR B MALU', 'Fitness': '', 'Insurance': '2020-10-21', 'PUCC': '2021-02-16', 'VehicleType': 'MOTOR CAR(LMV)', 'Location': 'DY.RTO,SOLAPUR', 'ImageUrl': 'http://www.carregistrationapi.in/image.aspx/@Qk1XIFgxIDIwRCBDS0Q='}

V. CONCLUSION

The modified ANPR resulted most of the Unique number plates resulted with a successful recognition rate of 60% with an average processing time of about 0.2s to complete the entire image capturing to character recognition stage. Upon further training this system will produce more accurate results

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