

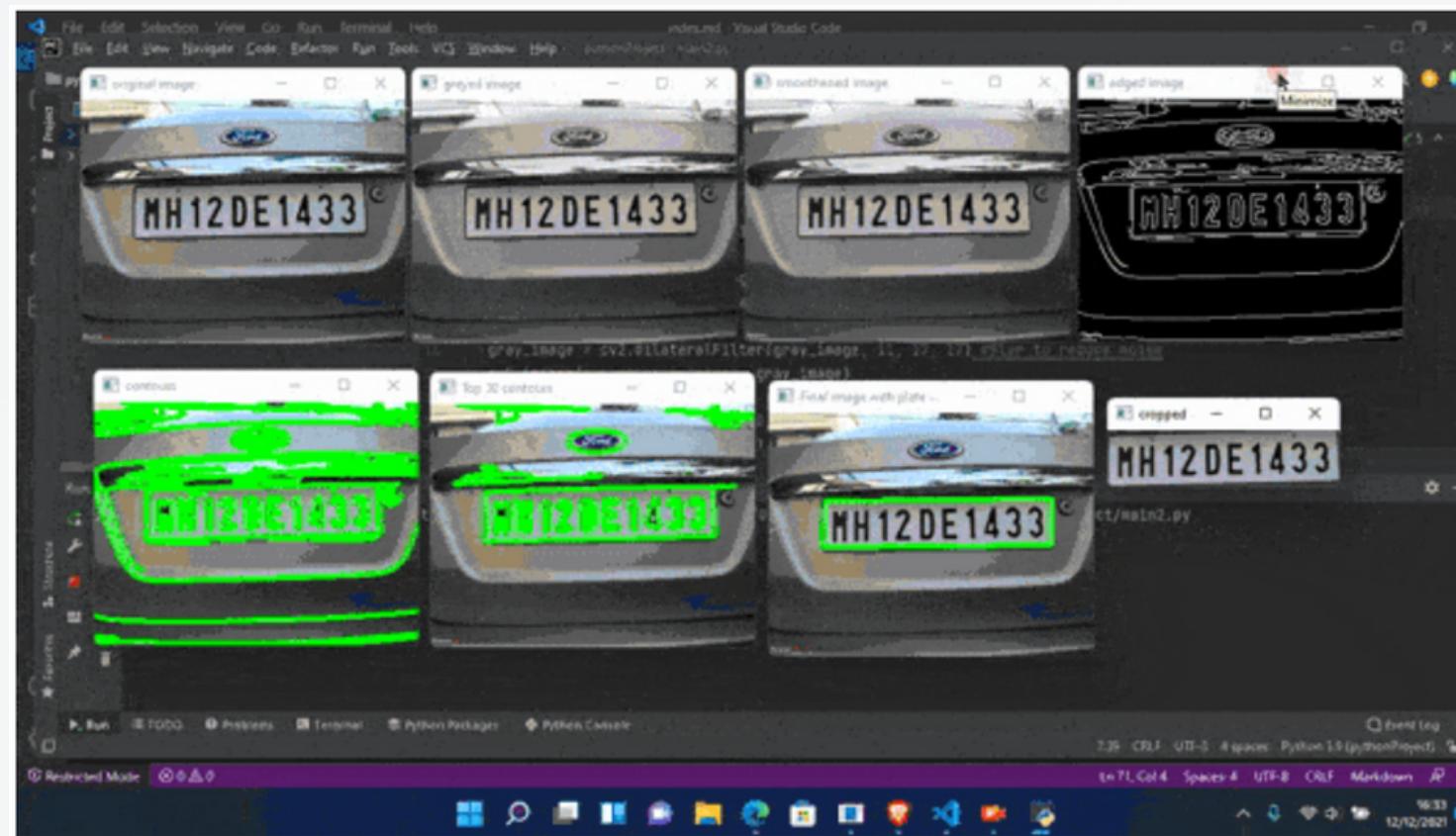
CAR PLATE LOCALISATION

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LITERATURE REVIEW: ALGO 1



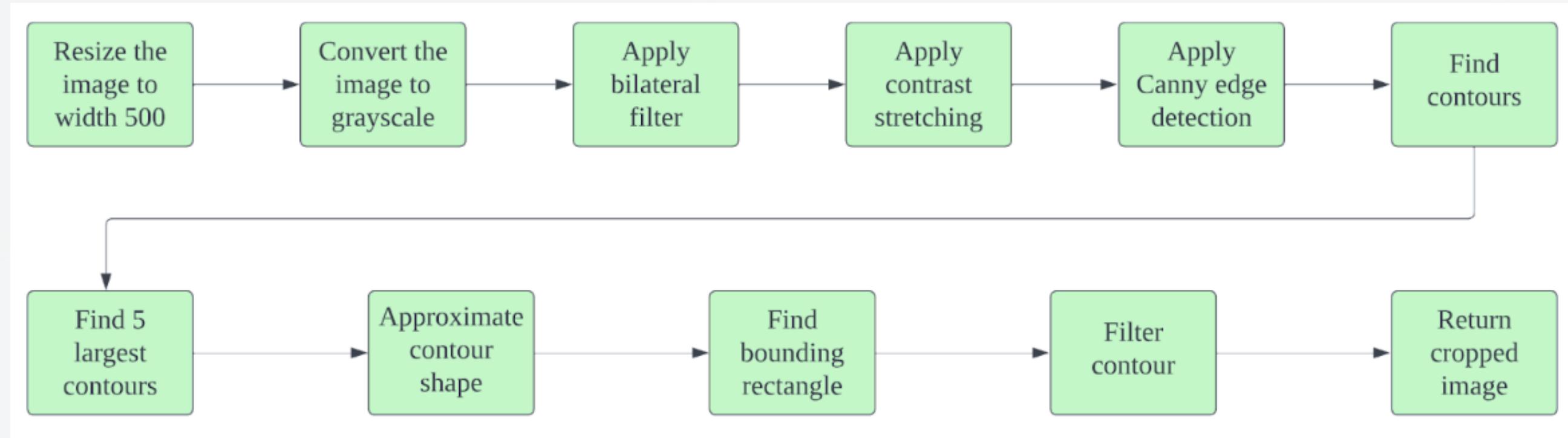
(SIMON KIRURI, 2021)
(ROSEBROCK, 2023)



Bilateral filter to reduce noise
Canny edge detection
Find contours
approxPolyDP

Blackhat morphological operation
Closing operation using a small square kernel
Otsu method for binary thresholds
Erosion and dilation
Consider based on aspect ratio

DESCRIPTION: ALGO 1



RESULTS AND DISCUSSION: ALGO 1

Category	Sample	Set 1	Set 2
Correctly identified	 	12	3
Incorrectly identified		2	0
Did not identify	NA	31	12
Total		45	15

RESULTS AND DISCUSSION: ALGO 1

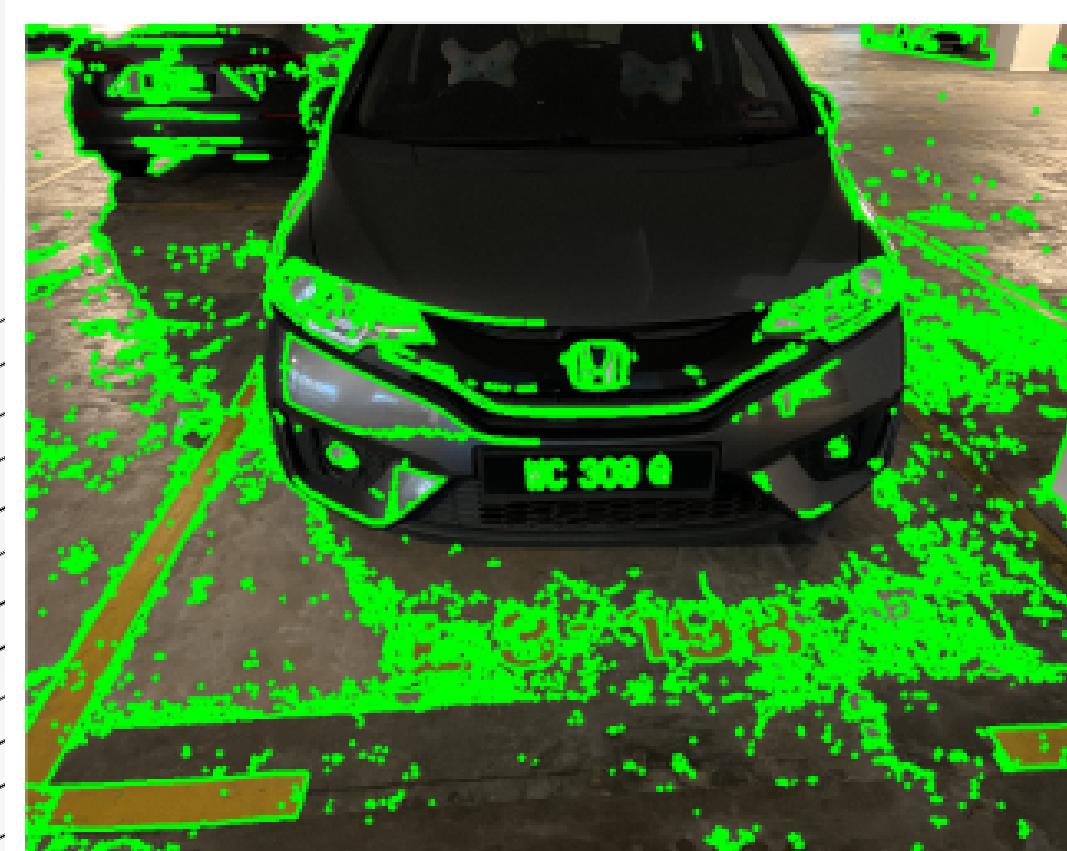
Wrongly identified



Incomplete car plate



Dark body panel



More than 1 plate

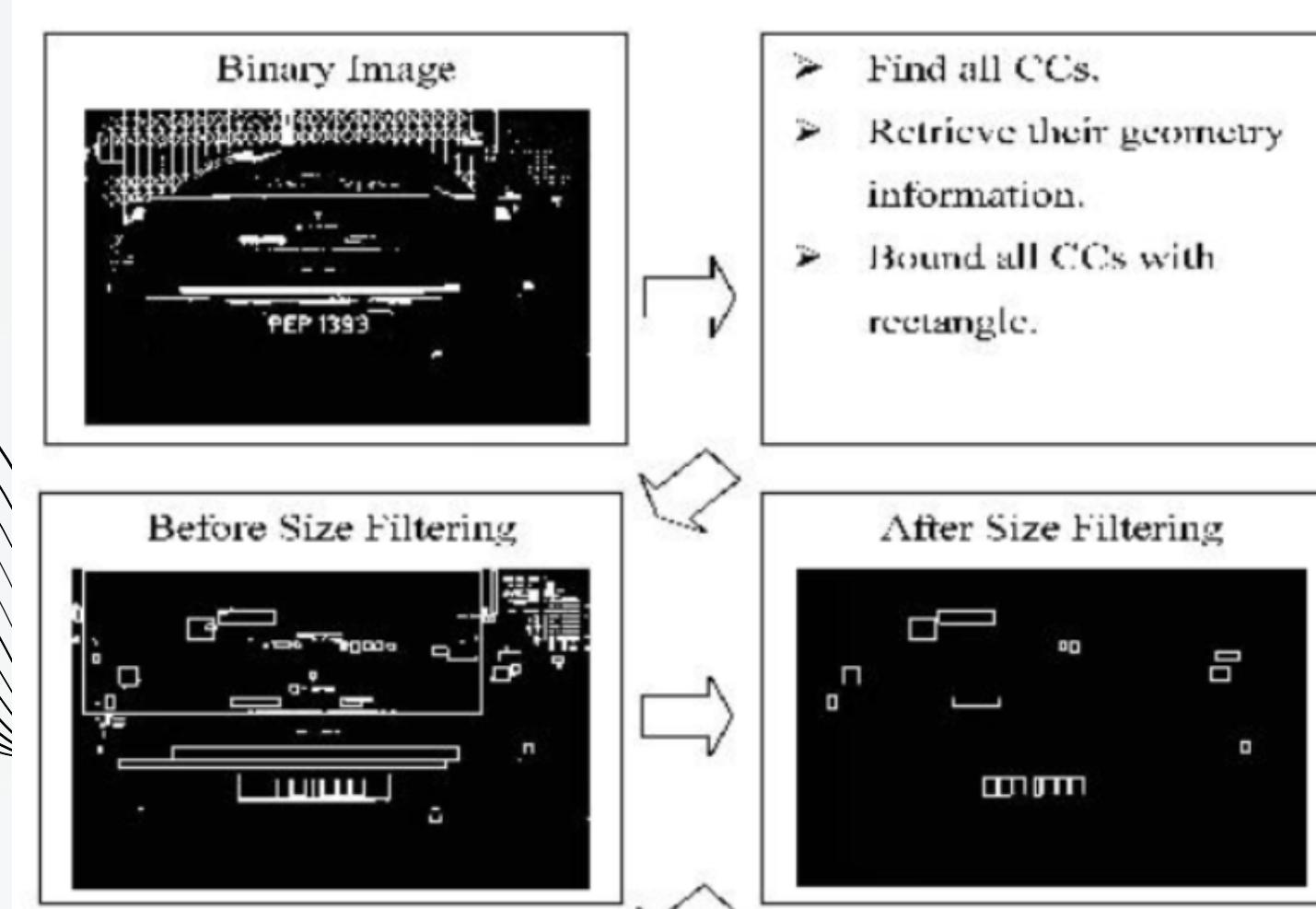


LITERATURE REVIEW: ALGO 1

IMAGE PREPROCESSING

First we find the connected component in the image and filter it out with the size of the components.

We will only keep the possible size of the characters.



Method referenced from Soon, Choo & Lin, Kueh & Jeng, Chung & Suandi, Shahrel Azmin. (2012).

CAR PLATE LOCALISATION



Fig. 2. Extraction of a plate region in horizontal



Fig. 3. The extracted plate region

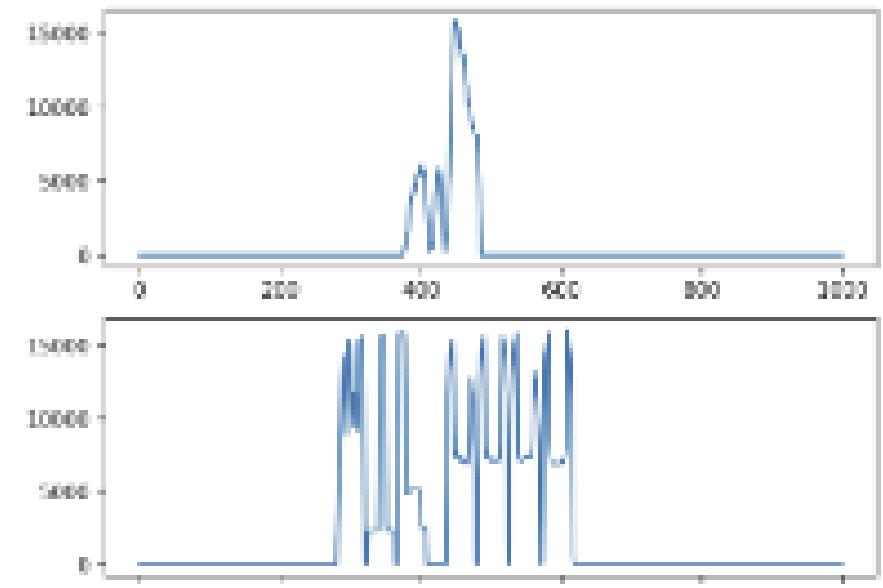
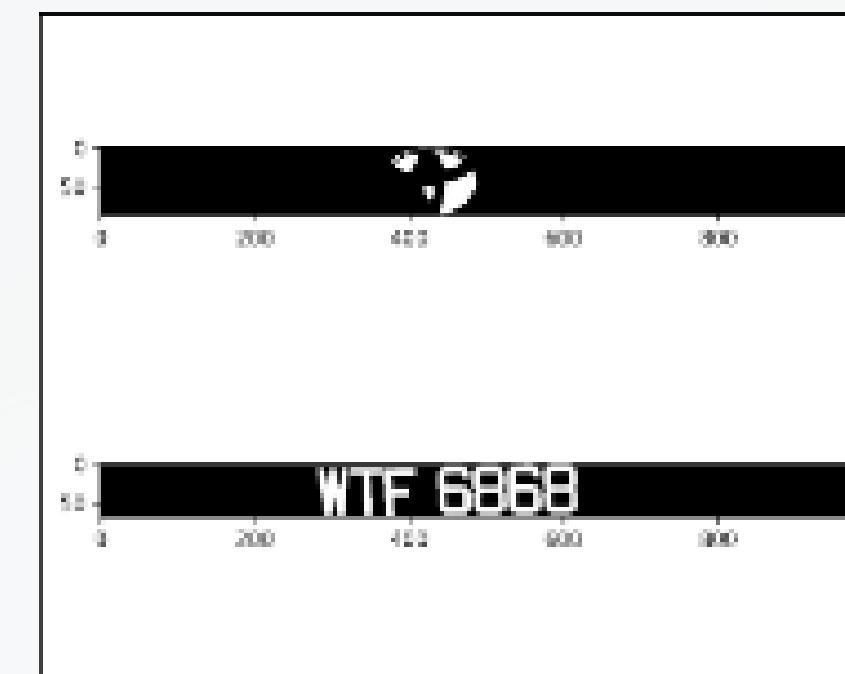
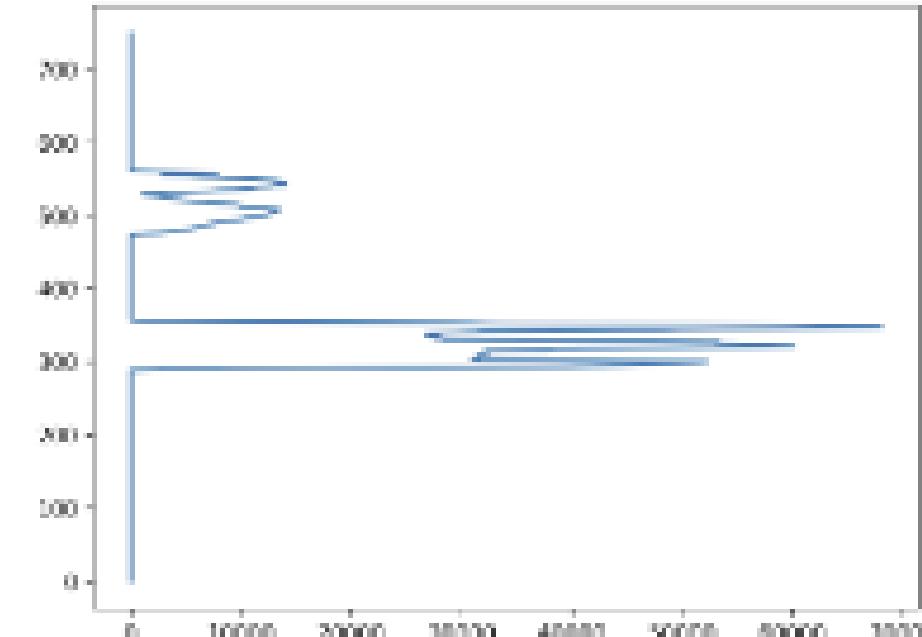
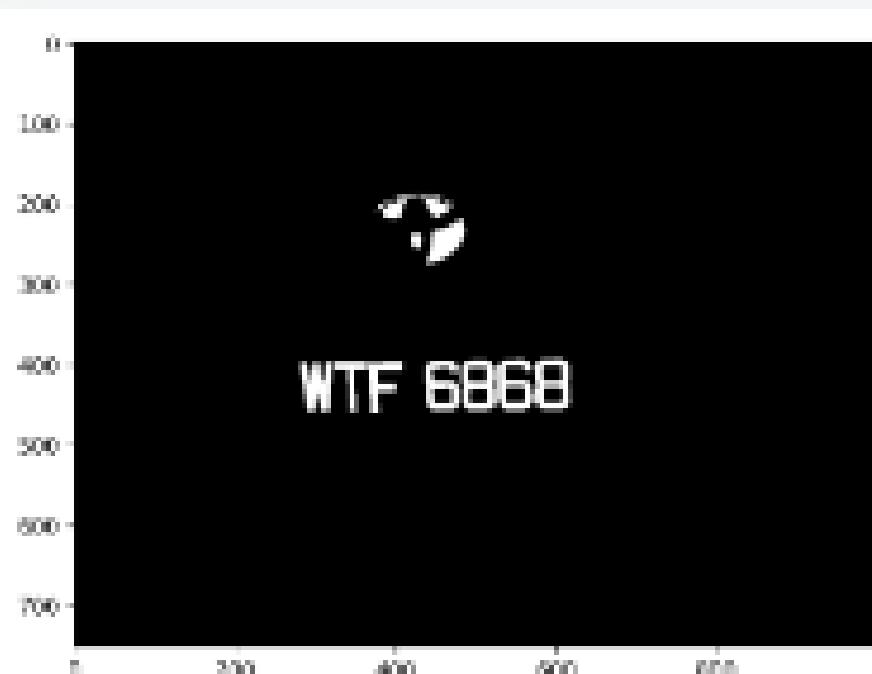
First a vertical frequency analysis is performed to detect the region that has high density of a certain colour.

Then a horizontal frequency analysis is performed on the potential regions

Finally the extraction is confirmed by some features e.g. Width to Height Ratio (WHR)

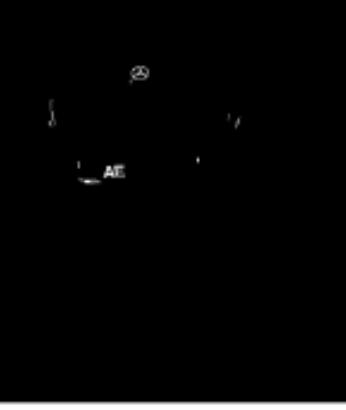
Method referenced from Shi, X., Zhao, W., Shen, Y. (2005)

DESCRIPTION: ALGO 1

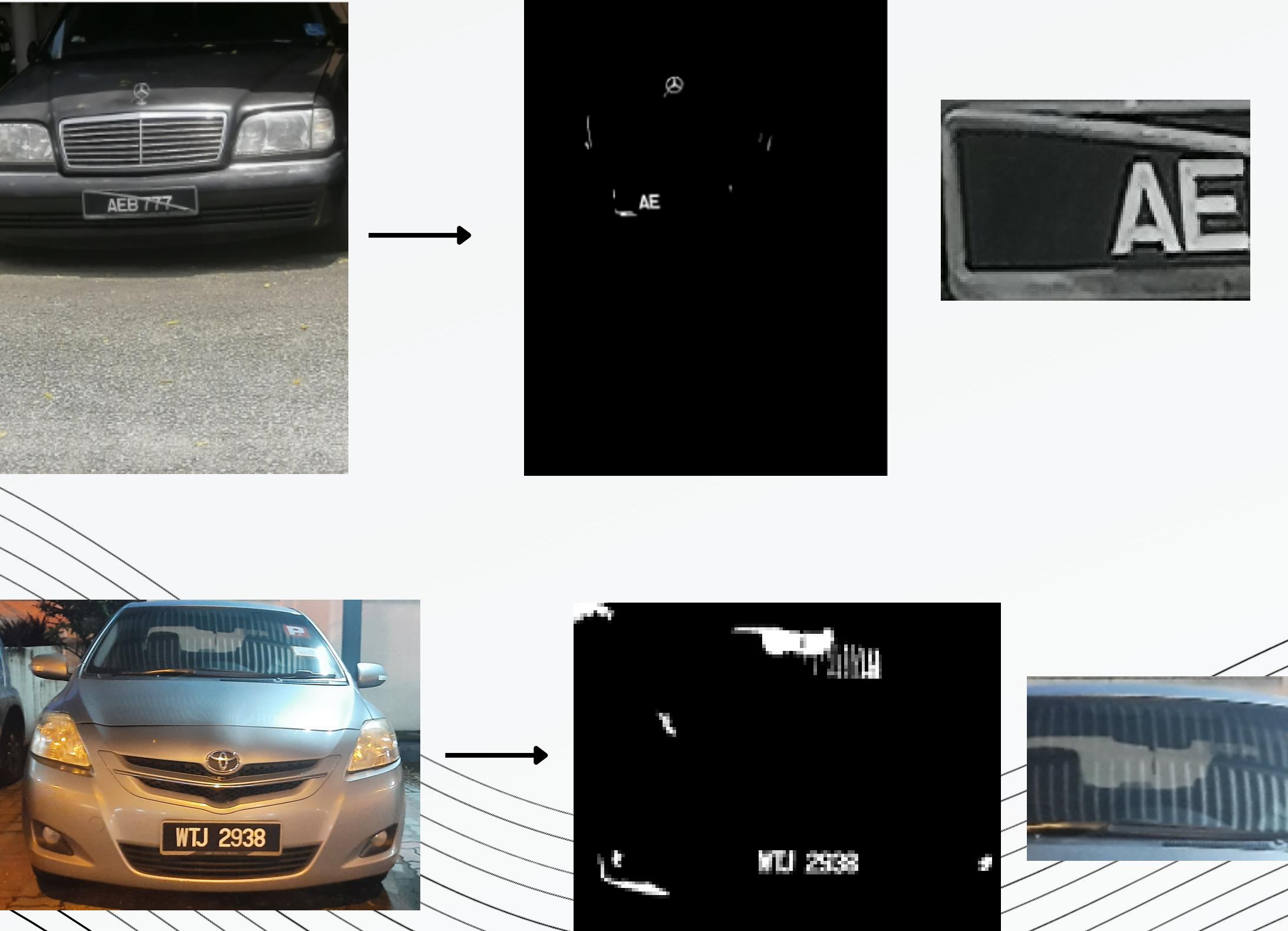


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RESULTS AND DISCUSSION: ALGO 1

Category	Sample	Set 1	Set 2
Car plate info retained	 VHR 9177	44	12
Car plate info fully or partially lost		1	3
Total		45	15
Correctly identified	VHR 9177	32	9
Incorrectly identified		13	6
Total		45	15

FAILED EXAMPLES:



REFERENCES

Shi, X., Zhao, W., Shen, Y. (2005). Automatic License Plate Recognition System Based on Color Image Processing. In: , et al. Computational Science and Its Applications – ICCSA 2005. ICCSA 2005. Lecture Notes in Computer Science, vol 3483. Springer, Berlin, Heidelberg.
[Automatic License Plate Recognition System Based on Color Image Processing | SpringerLink](#)

[Soon, Choo & Lin, Kueh & Jeng, Chung & Suandi, Shahrel Azmin. \(2012\). Malaysian Car Number Plate Detection and Recognition System. 6.](#)
<https://www.researchgate.net/publication/264888086 Malaysian Car Number Plate Detection and Recognition System>

[Rosebrock, A. \(2023, March 22\). OpenCV: Automatic License/Number Plate Recognition \(ANPR\) with Python – PylImageSearch. PylImageSearch.](#)
[OpenCV: Automatic License/Number Plate Recognition \(ANPR\) with Python – PylImageSearch](#)

[Kiruri, S. \(2021, December 31\). License Plate Detection And Recognition Using OpenCv And Pytesseract. Engineering Education \(EngEd\) Program | Section.](#)
[License Plate Detection And Recognition Using OpenCv And Pytesseract | Engineering Education \(EngEd\) Program | Section](#)