



University Of Surrey

# New Approach for Car License Plate Localization



Amin Safaei & Saeid Sanei  
Department of Computing, University of Surrey

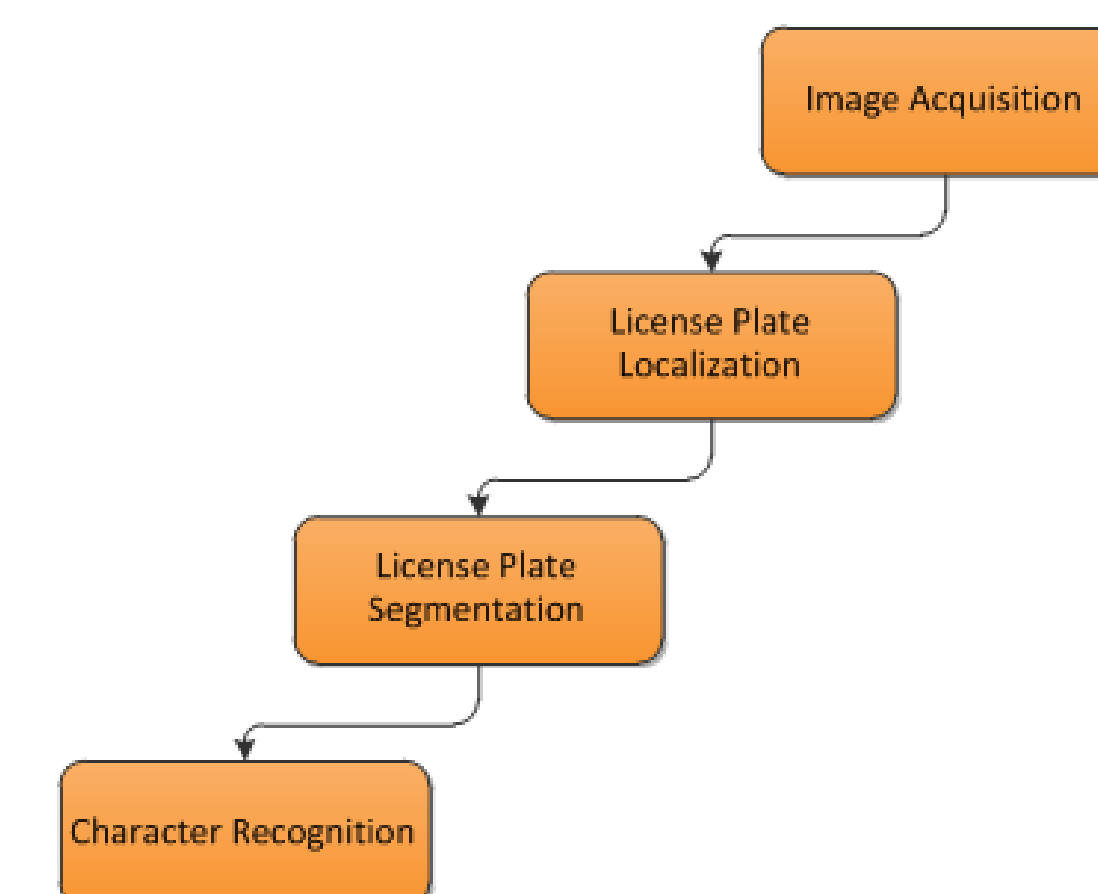
## Objective

An efficient technique in localization and recognition of car number plates is to compute and use suitable statistics of the image/video patterns and exploit the raw images as well as the edge map and the video information simultaneously . It can be shown that a more robust approach requires exploitation of various features from different modality data (image, video, and the edge map).

## The Concept of ALPR Systems

- Automatic License Plate Recognition (ALPR) is a well-known and most applied computer vision system.
- The main goal of any ALPR project is to design computer vision architecture with high recognition rate in presence of several environments intervention and disturbance without any need for a high quality video camera and expensive hardware.
- Challenges in ALPR :
  - Images taken under different environmental conditions
  - Lighting
  - Scaling of the frame
  - Orientation
  - Occlusion
  - Location of the license plates
  - Having multiple plates in a scene

## Block diagram of an ALPR system



Job of the ALPR (Automatic license plate recognition) system is not a simple task and the system will not always face a still car which has in-focus and sharply illuminated and contrasted plate number. In many situations the input image is not so clear and there are many system design issues that have to be considered in dealing with the car number plate, and the process involved is often very complex [1].

## Categorization of the existing algorithms

License Plate Localization using:

- Boundary and Edge Information
- Global Image Information
- Texture Features
- Color Features
- Character Features
- Combining Two or More Features

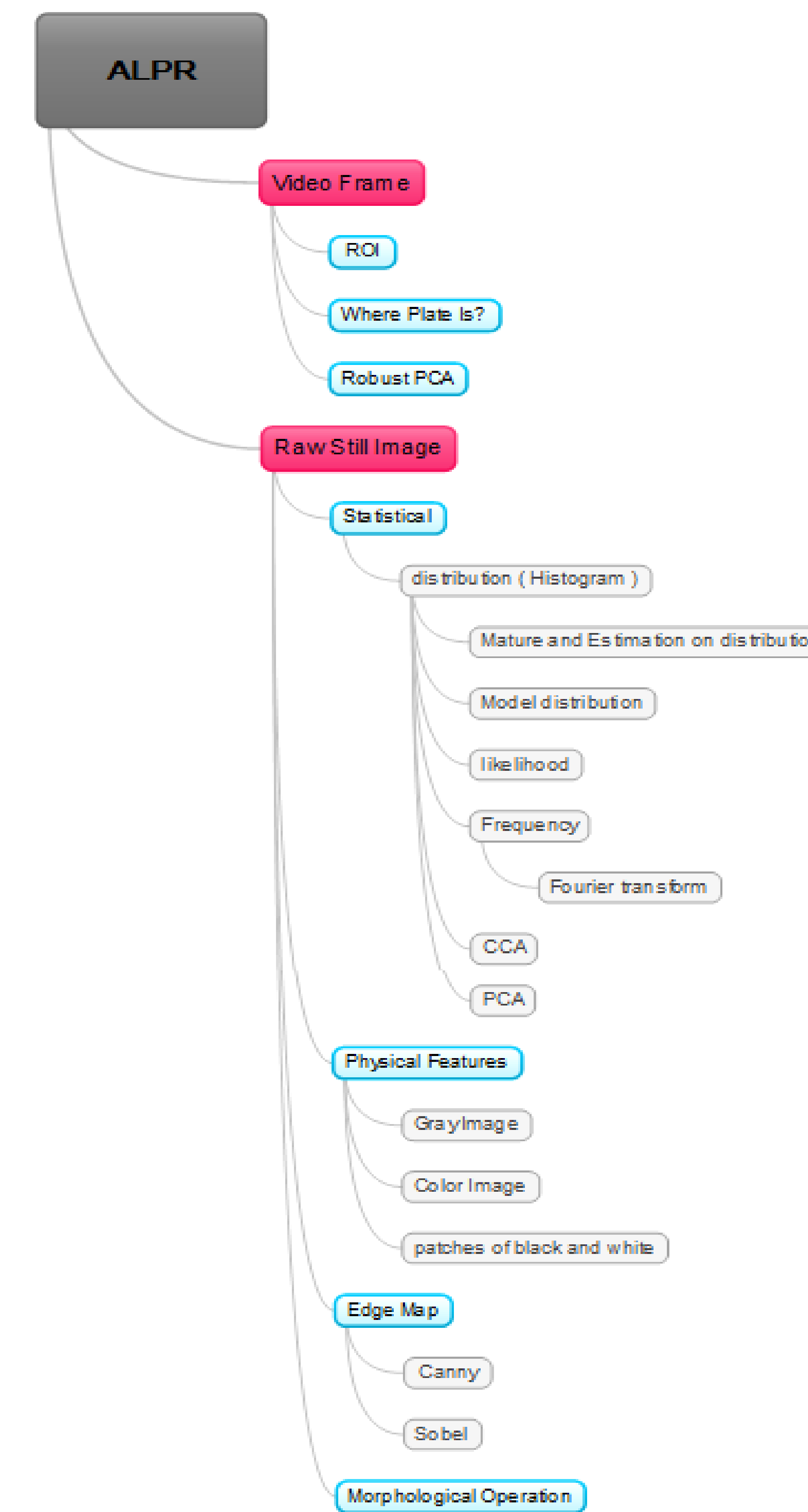
• When using boundary features in plate extraction, the boundary of LP which is a rectangle is considered. This method is simple, fast, and straight forward.

• Extracting plate number can also be done using global image feature. This is to find connected components using CCA method where the dimension is similar to a license plate. This method is easy and fast to run but may generate broken objects.

• When using texture features in the license plate recognition, frequent color transition on the license plate is considered and the algorithm is able to detect license plates that have even been deformed on the edges.

Source : [1,2,3]

## Proposed Method



– Why Video Frame?

- More than one frame gives information regarding region of interest (ROI) and the plate area which we can search in.

– Still Image

• Physical features

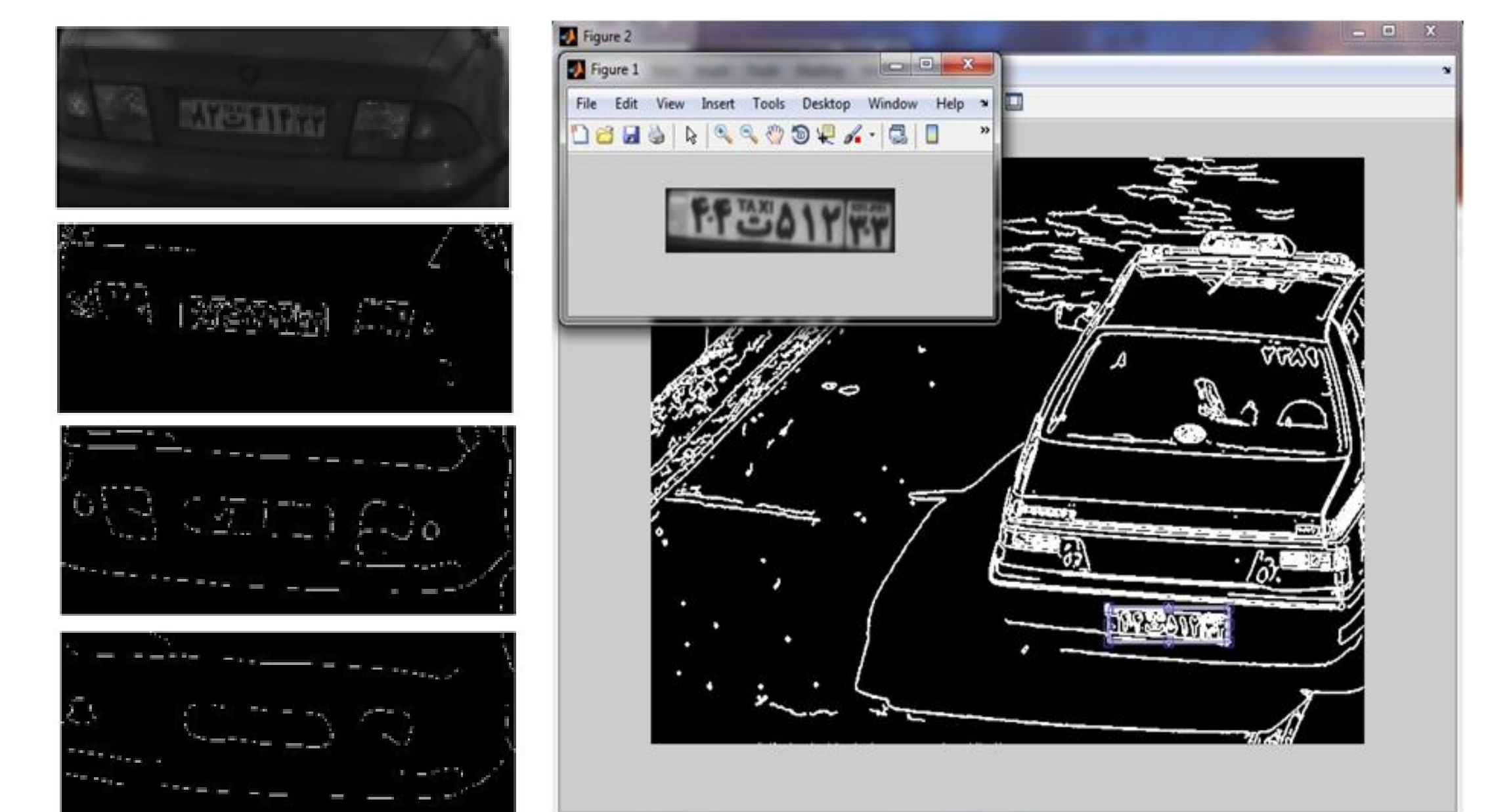
- Image color
- Image Gray level
- Potential regions of interest
- Edge map measures

• Statistical features

- Various order statistics
- Estimated distribution parameters
- Distribution model parameters

## Conclusion

- Application of gradient methods followed by applying morphological operators has been very common for detection and localization of the plate boundaries [4,5]
- Plate color plays an important role in distinguishing that from the environment.
- In a more complex environment a more robust statistical approach is required to not only cope with variations in the above features but also immediately focus on the area of interest
- An efficient technique in localization and recognition of car number plates is to extract suitable statistics of the image/video patterns and exploit the images, the edge map, and the video information simultaneously as described in the proposed method.



## References

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- [2] G. Garibotto, P.Castello, and E. Del Ninno,"Dynamic Vision for License Plate Recognition "Multimedia Video-Based Surveillance Systems, The Springer International Series in Engineering and Computer Science Volume 573, 2000, pp 272-283
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For additional information please contact:

Amin Safaei  
PG/R Computing  
Department of Computing , University of Surrey  
a.safaei@surrey.ac.uk