

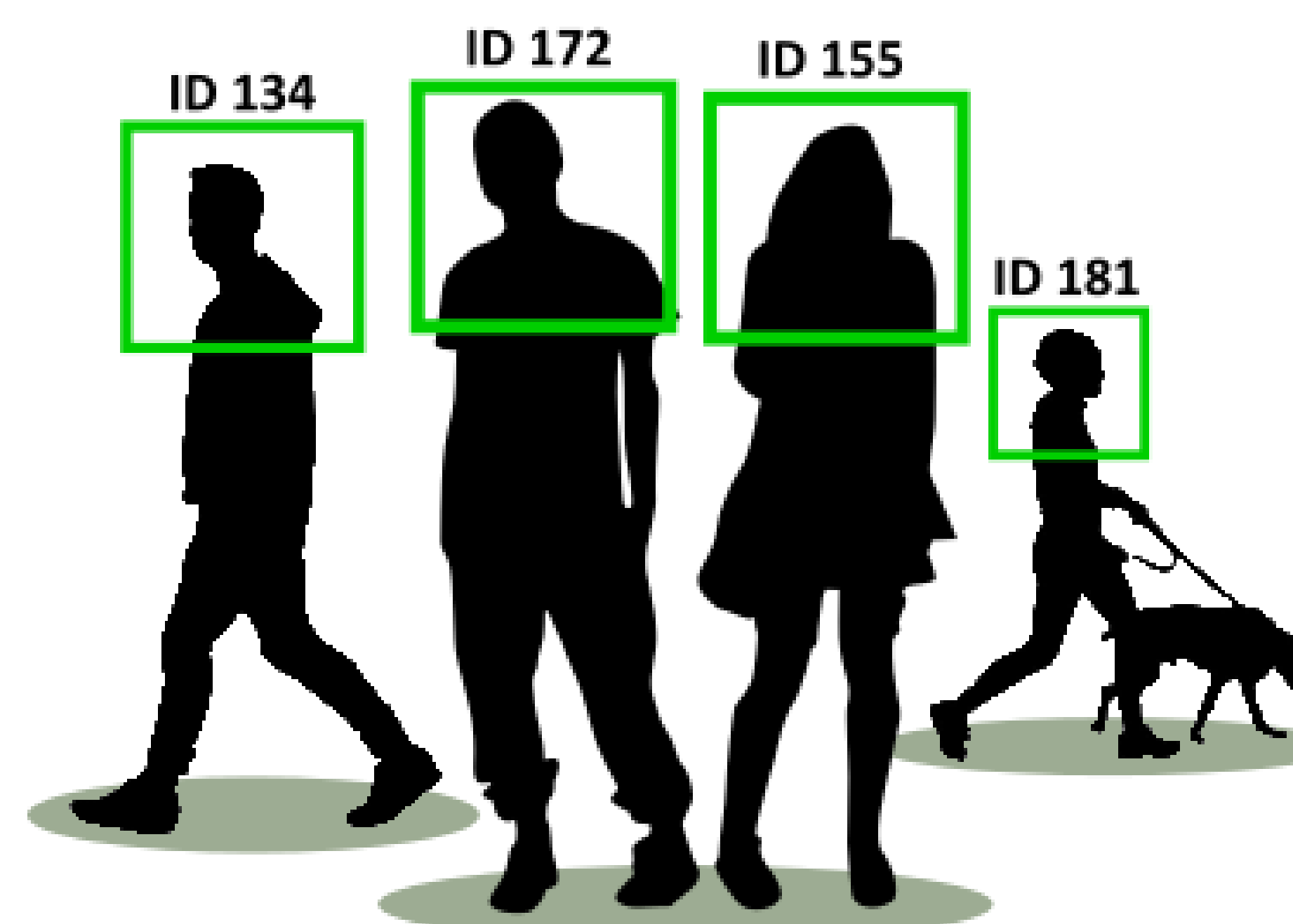
## ABSTRACT

Detection and tracking of multiple person is challenging problem mainly due to complexity of scene and large intra-class variations. I present a novel on-line method for multiple person tracking based on tracking-by-detection approach. An object tracking component is deployed to increase the performance of the method and decrease the number of detector failures. Furthermore I use a fusion component to associate the responses of the detection and tracking components. The proposed system was evaluated on available datasets and the results shows that it is suitable to use for this task.

## INTRODUCTION

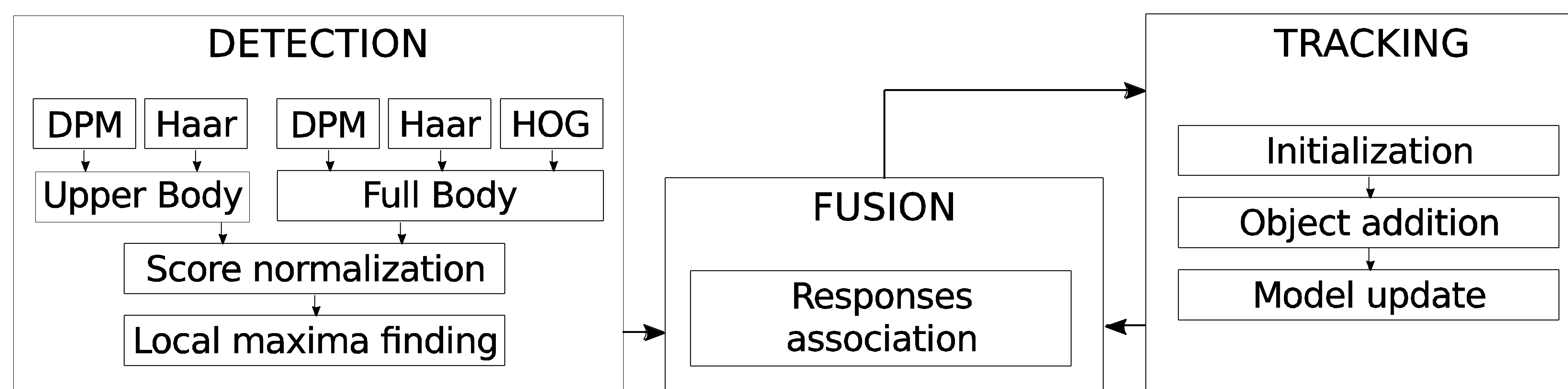
Person detection and tracking is one of the challenging problems in computer vision. Difficulty of this problem is caused mostly by the large variations of scale, appearance, viewpoint, articulation and occlusions. This task is important for many applications, such as surveillance, human-computer interaction, or behavior modeling.

I present an on-line method for detecting and tracking of multiple people in a scene from one static camera. The proposed method is based on a tracking-by-detection approach and cooperation of a detection and tracking part.



## SYSTEM OVERVIEW

Using the different models and object detectors I proposed the person detector which is capable of detecting partially occluded people. I deployed a state of the art object tracker to increase the performance and decrease the detector failures. In order to find new objects, that are not tracked yet, the detection and tracking responses are associated using the fusion component. The component controls the tracking by adding new objects and removing them when necessary.

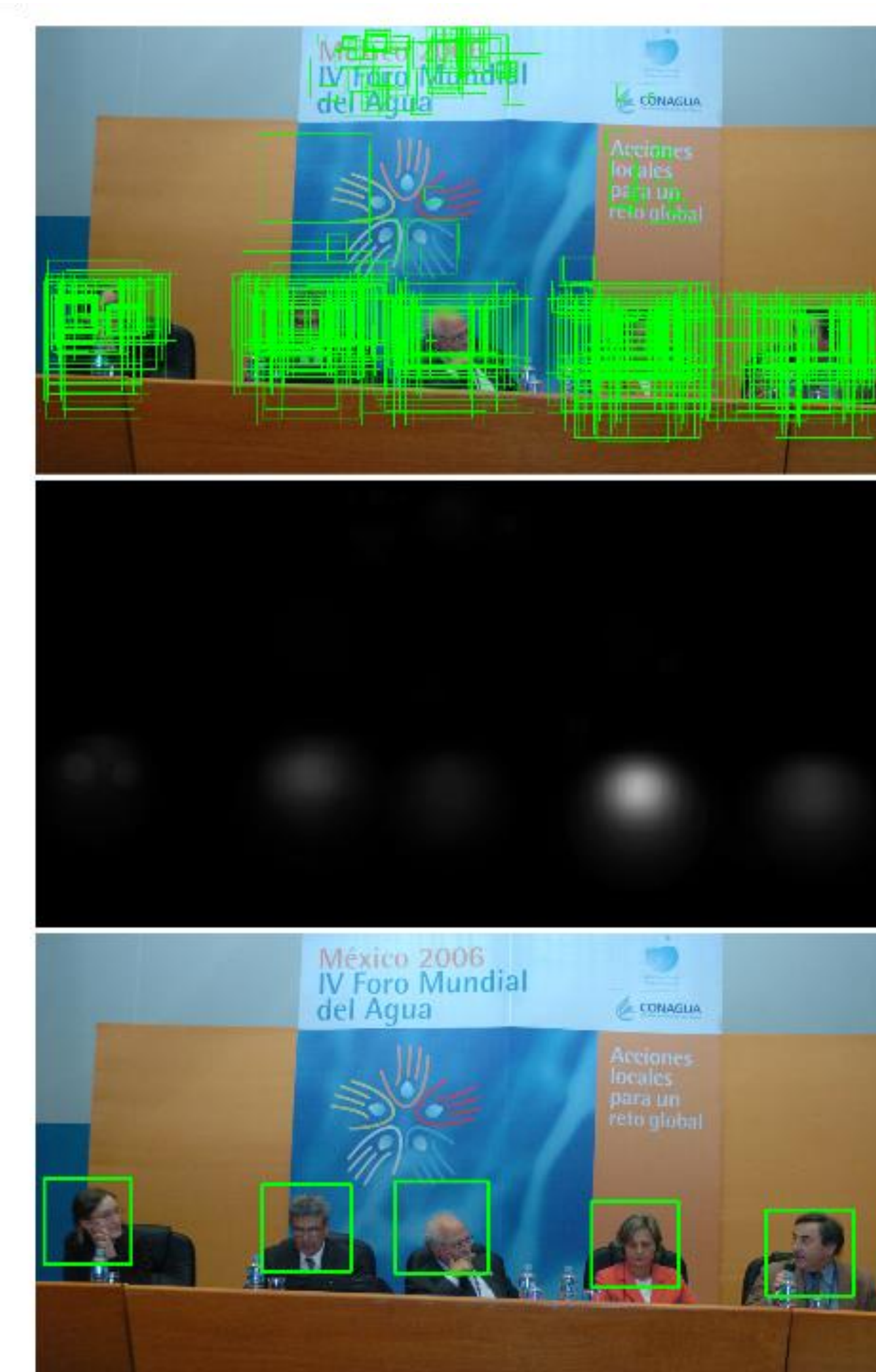


## MAIN COMPONENTS

The **detection** part is based on a combination of multiple features and models that allow increasing a detection rate while reducing the false positive responses. A problem with partial occlusions is handled by using a body part detection.

Another component of the tracking system is multi-object **tracker**. The component is deployed to increase the performance and decrease the number of detection failures in a run-time.

In order to control the tracking component, an association of the detection and tracking responses is presented. The association is part of **fusion** component.



## PERFORMANCE EVALUATION

In pilot experiments, I was interested in accuracy evaluation of the proposed method in order to compare this method with other algorithms. Results of the described method were collected and evaluated using Town Center Dataset. For the evaluation, I used a criteria of PASCAL VOC challenge where the detections with overlap larger than half with annotation are considered as true positive. The method achieved a 87.9% precision rate and a 66.2% recall rate.

## CONTACT

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