VEHICLE DETECTION USING MACHINE LEARNING

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Abstract

The purpose of this project is to detect the Indian vehicles using R-CNN and Faster R-CNN with the data set that contains Indian vehicles images. As we are using Indian vehicle data set, we can increase the confidence level of our trained model.

This is consists of six stages. Load the data set, designing convolutional neural network, configure the training options, training for detecting Indian vehicles

Keywords: Indian Vehicle, detection, Machine Learning, Faster R-CNN

I. INTRODUCTION:

Many new technologies are standing at the top of the market. As a result of these technological developments, people will face unresolved problems. But still most of the problem can be solved when computer have the vision. Humans cannot work for 24 hours a day with perfection, so that we are trying to make the machine learn and work with human memory and machine stamina and perfection. To get this, we are creating our trained model for detecting Indian vehicles. With this trained model, we can solve many problem such as traffic control, toll gate automation etc.

II.RELATED WORK:

The Vehicles are detected and the bounded boxes was drawn with less accuracy in the video frame and also when the vehicle is moving, the accuracy falls down. This will detect only limited number of vehicles. At each and every country there will be different types of bus and the pre trained model will not work for all the scenarios. The detecting vehicle was very slow so that we cannot process anything with the result.

III. PROPOSED SYSTEM:

Our project purpose is to train our own model for detecting Indian vehicle by the data set that contains the Indian vehicles. We are having 6 classes such as bike, car, Truck, bus, Auto and mini truck. The detection should be very accurate and our detecting accuracy is between 97 and 100 %. In our project the faster RCNN is the feature extracter and its performance is also very good.

IV. OBJECT DETECTION

There are many types such as faster R-CNN, R-CNN, CNN, mobile SSD net etc. Among these types faster R-CNN gives the best performance and satisfies our requirements.

There are many ways to detect the object in the market but using faster R-CNN will be the best way for our project.

Each and every requirements are different so finding your required model gives you a good trained model.

V. REGION PROPOSAL NETWORK

To reduce the work load, the region proposal network is highly important.
Because we can reduce the concentration space so that the machine does not want to take care of the unwanted region in the video frame.

VI. CONCLUSION AND FUTURE ENHANCEMENT

To detect the Indian vehicle using faster R-CNN was completed successfully. Our training model detects the vehicles in the accuracy between 95% and 100%.

The detection time taken by the machine is 0.07 seconds. Now if we provide the video frame as an input, then it will gives the output with

drawing the bounding boxes around the vehicles along with vehicle name and accuracy value.

We have made the threshold value as 90% so that if the accuracy is greater than 90% only it will draw the bounding boxes.

This is to avoid unnecessary bounding boxes and also this will leads to project failure.

The future enhancements are, now we have trained only for 6 classes. We can go with as many classes we want.

The performance was already excellent so performance wise we need not go for additional features until you unsatisfies with the performance.

VII. REFERENCE

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