

## Automatic Helmet Detection and ID card Detection for Motorcyclist

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### Abstract

*Motorcycle accidents have been increasing enormously through out the countries across the years. Helmet is one of the most important equipment for the bike raiders. If a bike raider is driving without a helmet the chance occurring accidents are more. This Paper gives an explanation about motorcycles detection along with the helmets.*

**Key Words**—Machine Learning, Bike Detection, Helmet Detection.

### I. INTRODUCTION

Machine Learning is a field of Computer Science that permits computer to gain the information without being unequivocally customized. Regulated learning is a sub field of machine learning that needs the information needed to learn. Information will be Marked by the humans and also by using some framework. During Preparation procedure, calculation attempts to discover the connections between yield and the feeded input. Once, the preparation gets completed, framework can be utilized by different strategies with the help of administered learning calculations.

Helmet is one of the safety precautions that need to be taken while raiding Motorcycle. In lot of situations causing of accidents are due to lack of wearing helmets for motorcyclists. In many countries helmet is the must and should equipment while raiding a motorcycle. The Government is also imposing some charges on the motorcyclists to those who are not wearing helmets.

When a survey is conducted in USA, its reported in 2014 that nearly 15% of the fatally injured motorcyclists are not wearing helmets. Some countries having restrictions on the helmet types to wear and in some other countries both raider and pillion raider should be wearing the helmet. The count of accidents without helmet has gradually increased to 42% as of 2018 survey.

Keeping on the count of Motorcycles that exists in society, the intelligent traffic system has become popular, that includes bike detection, human with helmet detection and tracking. Separation of motorcycles from the image can be seen as the first step to detect the motorcyclists helmet use. The vehicle tracking needs the complete processing.

### II. LITERATURE SURVEY

Creators:-Stemy Simon, DivyaKumaran A.

Paper:- Detection of Motorcyclists without cap and fine installment utilizing open cv.

The cap is the primary security gear of motorcyclists, yet numerous drivers don't utilize it. The principle point of this undertaking is to build a programmed identification of the motorcyclist without head protector from video utilizing OpenCV library apparatuses. In the event that they are not wearing the protective cap, the tag of the cruiser is centered consequently. By utilizing Computer Vision strategy we can distinguish and perceive the tag number. We make the preparation set of various characters of various sizes.

## **EXISTING SYSTEM AND DRAWBACKS**

In the Existing System, the manual Photographs of number plates are taken by the Traffic Police Department. It is an Outdated approach. Existing systems involve more number of humans which is not a good process to get high sustainability. The approaching we are following is Cost effective. The errors made by humans are more. The major limitation of the this existing system is it uses the full frame to find exactly where the helmet gets located which is very expensive and it also gets deviated with similar other products which are that of helmet.

## **PROPOSED SYSTEM**

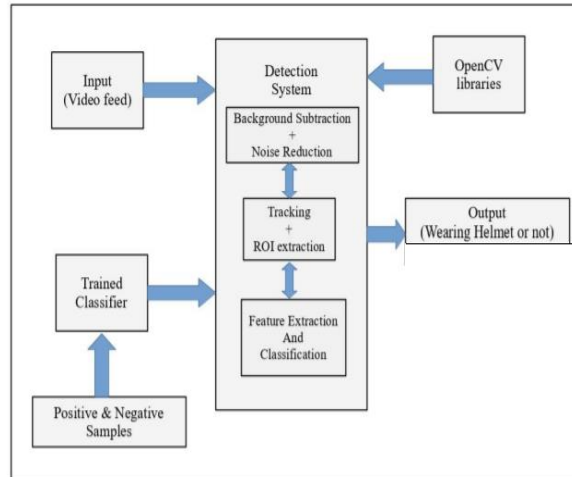
In the approach we proposed it initially detects the bike from the video and convert the video into images using FPS (Frames per second). The classification is further made based on algorithmic techniques.

In the proposed framework, adaptive background is applied at the initial stages for subtraction to detect the moving objects. These moving objects are given as input to a CNN classifier. The fetched output is classified into two sub groups, namely man with protective helmets and without protective helmets. In the next step the images with motorcyclists are forwarded to next process by discarding the remaining objects in the given image. By this we can easily determine the person with protective caps.

Accept that the head is situated in the upper piece of the approaching pictures and subsequently find the head into top one fourth piece of pictures. The found leader of the motorcyclist is then given as contribution to second CNN which is prepared to arrange with head protector versus without-head protectors. It is accurate and time saving process. The algorithm used in this process is YOLO algorithm. YOLO is a clever convolution neural network for doing object detection in the real time environmental situations. The motorcyclists with and without helmets are placed in a separate individual folders.

## **III.SYSTEM ANALYSIS**

### **SYSTEM ARCHITECTURE**



## SYSTEM REQUIREMENTS

### Hardware requirements:

RAM : Min 4 GB  
Hard Drive : Min 100 GB

### Software requirements:

Disk Operating System : Ubuntu  
IDE : Ubuntu Compiler

## IV.IMPLEMENTATION

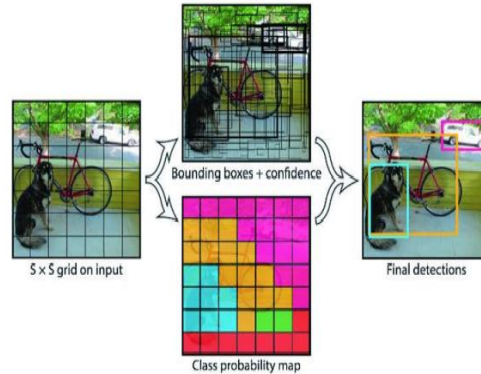
### IMPLEMENTING ALGORITHM

YOLO, is the one of the quickest way to deal with locating the objects. The work that is made earlier on object detection makes the classifiers to perform on the locations. Rather, we indicate the object recognition as a irrelatable issue to bouncing boxes which are spatially isolated and the probabilities on the class can be related. A strong and vigorous neural system predicts on the jumping boxes and class probabilities of the class legitimately from full sized photograph in a single classification methodology. Since the overall pipeline of discovery is strong, it tends to be streamlined ennd-toend legitimately on identification execution. THIS bound together engineering is amazingly high speeded. This high speeded based YOLO model procedures progressively at forty-five edges Per second. A small rendition of the computer, rapid YOLOalgoriyhm makes an astonishing one fifty five casings at a single instance of the time, as yet that achieves the twofold the map of other ongoing locatorsclassifoied by the clqassifiers.

By making use of the best frameworks of class locations, YOLO makes the mistakes confinently , however it is defined to be the less decreqased to foresee frauddiscoveries where the data is not available to make the classification process. At last, YOLO learns extremely portraying the collecting articles in a broad way. It out plays all the remaining location techniques, including D-PM and R-CNN, by a wide remaining data while concluding up from normal photographs to fine art on the People Art Dataset present in the yolo itself.

The YOLO Detection System. It basic and clear to prepare the pictures with the algorithmic procedure of

yolo. Our structured feature resizes the whole photograph containing the information to  $448 \times 448$  sized frame, runs a Strong convolutional organize on the photograph, and limits the identification of sub sequential data by the model's certainty Principle. Classifier for that protest and evaluates the photograph at different areas of scope and scales in a test photograph.



## V.EXPERIMENTAL RESULT



Images of persons with and without helmet





Images of persons without helmet classified by using YOLO Algorithm



Number Plate Extraction Motorcyclist without Helmet



Image of Motorcyclist with Helmet

## VI.Challenges

YOLO forces the one of the strong constraints of spatial that is can contain a sinle class and able to predict only two of the boxes.This can limit the objectsthat are found near our model that can be predicted. The major constraint about object forsee is to Multiple the aspect ratios with the spatial scales that may be appeared in wide range of scales.The annotated data that is found can be categorized into ansubstantial hurdle for data. Considering an image filled with lot of background data, the data may get eliminated when classifying the background subtraction process.

## VII.CONCLUSION

We present YOLO, a model that is bound together for detecting the object location. Our Model is able to analyse the whole picture and can be constructed easily. Yolo is not similar to that of remaining classifiers , this makes the classification of the picture much easier and identification of misfortune work can be detected easily and Yolo is quickest among the classifiers for producing the output by making the execution faster. This creates a new venture for the projects that are interested in availing the faster execution, Enourmous Collection of the data and discovery in the vigerous item. The data can be analyzed vin a quicker fashion that leads to the faster execution of the vigerous amount of data and a reliable amount of data can be predicted.

## FUTURE ENHANCEMENT

The Helmet detection for Motorcyclists can be enhanced in the future in different kinds of ways such as:-

- Future work includes increasing the accuracy of detecting helmet in an video using FPS
- Number plate extraction and send a ticket to the appropriate person.

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