PROJECT TITLE: - ROAD OBJECT DETECTION USING DEEP LEARNING

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Abstract: -

There is a need for an intelligent transportation infrastructure and now there are technologies which could help us. Artificial Intelligence (deep learning in particular) could help with a lot of solutions to increase the efficiency of the current systems. The ability to detect and classify vehicles accurately is of paramount importance for the intelligent systems to succeed. In a country like India with growing population and limited space, these systems could play a vital role in helping us get around in the near future. Here, the focus of this project is to solve a few problems that are very relevant in the context of India. The aim is to detect and classify vehicles efficiently on a real time basis. This sets the base for further actions to be taken. For example, these actions can be detecting helmet, detecting triples, detecting seat-belt etc... (Depending on the type of vehicle). This system could potentially help reduce traffic violations and also improve upon the safety of those using the road network.

Introduction: -

Traffic accidents are one of the major causes of death, injuries and property damage. The reasons that lead to these accidents are driving over speed limit, driving under influences and not using helmets and seatbelts. It is reported in India there are almost 5 lakh traffic related accidents which have caused over 1 lakh deaths. Out of this approximately half of them are motorcycle related accidents. Travelling by a motorcycle has a higher risk of accidents than driving by a car or other vehicles. Motorcycle accidents have a high likelihood in resulting in an injury most of which are concussions and brain damage. This risk is higher for the riders who are not wearing a helmet. Wearing a helmet can somewhat prevent the rider from fatal injuries to the head and thus preventing death. In our country, the law asks the citizens to wear a helmet when riding or travelling in a motorcycle but there are many people violating it. So in order to make sure that the motorcycle riders are wearing helmet, a system should be there to detect helmet on a motorcycle riders and issue a penalty to these not wearing it. The existing systems used are either manual detections or using algorithms that are slow or less accurate. The proposed system uses YOLO model for detection which is fast and has high accuracy. The process of issuing the penalty is also automated in the system by detecting the registration number of the vehicle by means of the optical character recognition (OCR) and messaging the owner of the vehicle. This system can be further developed to detect more safety equipment.

MOTIVATION: -

I Got Motivation from the world where I used to Live Because during night time or the Day time there is so accident occurs to reduce the number of casualities I had work on this project.

PRIOR WORK(BACKGROUND): -

In BackGround we use the python Language

OUR APPROACH: -

My Approach is using through the ultralytics, yolov8n, cvzone, math, opencv .

RESULTS: -

We train the helmet training data set using the YOLOv8n model. It is discovered that during the initial training phase, the model mapping rises quickly as the training time increases. On the variously colored helmets, YOLOv8n has an effective detecting impact.

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