

**A**

**PROJECT REPORT**

**ON**

**“ROAD OBJECT DETECTION WITH DEEP LEARNING”**

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**Abstract**

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Automated driving and vehicle safety systems need object detection. It is important that object detection be accurate overall and robust to weather and environmental conditions and run in real-time. As a consequence of this approach, they require image processing algorithms to inspect the contents of images. Their strengths and limitations are analysed based on parameters such as accuracy (with/without occlusion and truncation), computation time, precision-recall curve.

**Introduction**

The automobile industries have developed rapidly since the first demonstration in the 1980s [[**1**](https://www.mdpi.com/2079-9292/10/16/1932#B1-electronics-10-01932)], the vehicle navigation and intelligence system have improved. However, the increase in road vehicles raises traffic congestion, road safety, pollution, etc. Autonomous driving is a challenging task; a small error in the system can lead to fatal accidents. Visual data play an essential role in enabling advanced driver-assistance systems in autonomous vehicle.

Object detection is a method of localizing and classifying an object in an image to understand the image entirely. It is currently one of the first fundamental tasks in vision-based autonomous driving. The object detection methods make bounding boxes around the detected objects and the predicted class label and confidence score associated with each bounding box.

**Motivation**

The motive of object detection is to recognize and locate all known objects in a scene. Preferably in 3D space, recovering pose of objects in 3D is very important for robotic control systems.

**Prior Work**

In general, over the past two decades, the field of object detection has been through two periods: Traditional object detection algorithms (before 2012) and Deep Learning-based object detection algorithms.

* Traditional Object Detection Algorithms
* Deep Learning-Based Object Detection Algorithms

**Our Approach**

* Using delimiting frames or by using object segmentation.
* provides a fast and accurate means to predict the location of an object in an image.

**RESULTS**





