"Difficulties for Implementing Self-Driving Car in India"

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Abstract— This paper is mainly focusing on Difficulties that can occur and its avoidance or suggests solution for Self-Driving Car in country like India. Self-Driving car is one that works on its own with little bit or completely no manual intervention is required. As technology is getting advance day-by-day, Cars are also getting modifying from Manual to Automatic to Self-Driving. Self-Driving Car is useful in many ways like for Blind people, Disabled people, Cab Services, etc. There are not many difference between a Normal car and Self-Driving Car the main function is to transport user from one destination to other, where they differ is in Normal car user have to drive by himself / herself, while in Self-Driving Car the Car itself drive that is it is Self-Driving Car. Few reason why Self-Driving Car is being not fully implemented is listed in these paper and how to avoid those is also listed.
Key words: Self-Driving Car, Indi, Full Automatic, Driverless CA, Developing Country

I. INTRODUCTION

Self-Driving Car is not new technology, since the invention of the early models of Cars, since then the concept of Self-Driving Car came into existence but due to lack of proper resources the idea was dropped. In Early 2010 Big Car Industry stared exploring this field again. They set some basic Rule or standard for Self-Driving Car. Since then All Car Company naming a few of them like Google, Tesla including Cab services Company like Uber are investing heavily in this Project. Goggle and Telsa have successfully implemented Self-Driving Car, and are still running on the roads. Waymo project is also well known in Self-Driving Car. In these paper we will see some difficulties that a major problem in Implementing Self-Driving Car in India.

In this research paper we will mainly cover these three major problems that are 1) Road Detection 2) Broken Road 3) Traffic Signal Detection. There are many problem related to Self-Driving Car, we are Focused on these Three.

II. LITERATURE REVIEW

Without the requirement for a driver, cars may become mini leisure rooms, without the need for controls, there would be more space available inside the Vehicle and one of the best thing is no need for passengers to face forward.

The Problem we mentioned above can have multiple solutions and may be in coming year due to advancement in technology these problems may or may not be valid, geographical area also matters. Like weather the country is developed or underdeveloped or still developing. Using proper Camera and Lidar Sensor the First and Third Problem can be solved easily since. The Proper explanation will be done in section of ISSUE .The Second Problem is more related to comfort of the user and to keep Car in the proper condition, since pothole are one of the important issue its avoidance is quiet challenging.

III. ISSUE

Here in this section we will explore the problem faced by Self-Driving Car as we mentioned in above section, there are chances that these problems may or may not be changed for better or worse context.

A. Road Detection

Road Detection is one of the important tasks for Self-Driving Car to do to move. In India, metropolitan cities majorly have well maintained but in rural area roads may be or not well maintained or not even developed. This is a common problem in every country weather developed or not. In Rural side of India, Road Detection may be quite challenging since no proper marking of road and at night no street may be present or not at all.

B. Broken Road

As the problem of road detection is the problem of broken road. The number of the accident in India increased due to increasing number of pothole on the road. This is a major concern to the Self-Driving car to take care of this Issue, avoiding car crash or similar. This is not the problem of this India, its globally but developed country have less of these problems due to high maintenance in road and traffic condition, bigger roads, good infrastructure made.

C. Traffic Light Detection

Following traffic signal is a must. As human can see Traffic Signal we can respond to it, problem occur in self-driving Car where they can't see, but following traffic signal is compulsory. So it's also necessary to take care of this problem or else you may be fined by the traffic police or even our license for driving may be cancelled. So we can't just neglect this problem. Proper measurement should be taken so user may have convince while travelling. Again Traffic Light may be in metropolitan cities but not in villages so that also should be considered. It totally depends upon geographical area where you drive where there maybe traffic signal or not.

IV. POSSIBLE SOLUTION/SUGGESTION

After seeing the Problem here is a possible solution we can offer.

A. Road Detection

So these is a major problem in Self-Driving Car, to avoid it we can use 360 degree HD camera along with ultrasonic sensor or lidar sensor. Camera will be used in Object detection and Road Detection. Here is a Game Changer Lidar sensor give give thermal outline uptila a particular range its just like small 3D graph. This will not only help in Road Detection but also whats around the Car.

B. Broken Road

Here we cannot just rely on camera, we need a lidar sensor type of sensor we can get complete information of the surrounding so we can avoid pothole.

C. Traffic Light Detection

Here camera is more relevant than Lidar sensor, we can use TensorFlow /OpenCv for Traffic Light Detection.

V. ACKNOWLEDGMENT

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