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SMART AUTOMATION IN VEHICLES AND REAL TIME OBSTACLE(Object) DETECTION [SAVRITOD]

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Abstract: Our mainly concentrated on the concept of accident prevention and obstacles detection. Heavy vehicle drivers in the highways can expect unexpected threats in the pathway unexpected threats in the pathway which may be even turn out to be fatal. Always a human eye could not be trusted to find out the obstacle that the vehicle is going to face during the travel so we have developed a protype which could detect the obstacles without considering its size using the help of ultrasonic sensor and the groove coupler to measure the distance between the vehicle and the obstacle. If obstacle is find it give an alert or automatic break system is applied.

Keywords: Obstacle detection, accident prevention, alert and automatic break system.

I. INTRODUCTION:

This is concept, to avoid accident prevention by detecting the obstacle detection. Ultrasonic sensor is used to detect the distance between the object. A groove's coupler is used to measure speed to the vehicle so the output could be used to vary the range of the ultrasonic wave produced by the sensor. The velocity of the car is proportional to the range of the ultrasonic wave produced by the sensor, so when a car moves in a high speed, due to increase in the range of the sensor(ultrasonic) it can be detect the obstacle in the early time and the vehicle could be prevented from an accident either with an alert signal or break can be applied. Due to the deployment of image processing techniques we can easily identify different obstacle in the pathway.

These image processing technique add more detail in finding out the type of obstacle faced by the sensor. Our prototype can be either used in transportation vehicles or as an surveillance bot. If the image processing technique are enhanced more detailed and precise faults could be identified. It can also be used to surveillance the labor's working in a large assembly line and their minor activities could be also be monitored more effectively.

Since we are using a real time obstacle detection our bots could be more effectively used to monitor the wild animals in the forest and the people living nearby could be alerted if the animals try to enter into their habitat.

OBSERVATION OF THE STUDY:

In this paper we use a webcam which is used as an finding object and also used for surveillance camera. Our proposed system is one such monitoring technique that will be easy yet equally effective to implement. Python, Open CV processing time is very less. In the existing system they use a Deep learning for tracking processing. Arduino UNO is used an open-source electronic platform based on easy to use hardware and software. Ultrasonic sensor is to measure the distance. Groove coupler is also used to measure the speed of the vehicles so that the output could be used by varying the range of the ultrasonic sensor. They help in detecting obstacle and reduce the speed of the vehicles. By using this paper we can able to detect obstacle at early stage.

In this paper we use python and OpenCV algorithm. Background separation technique is used for object tracking. It is technique is for detecting moving objects from static cameras. The main advantage of this paper is to avoid accident, alert signal is obtained when the obstacle is find or sudden break system is applied.

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II. REVIEW OF LITERATURE

2.1 MARIO HIRZ GRAZ UNIVERSITY OF TECHNOLOGY, (2018) "SENSOR AND OBJECT RECOGNITION TECHNOLOGIES FOR SELF-DERIVING CARS"

Autonomous driving functions for motorized road vehicles represent an important area of research today. In this context, sensor and object recognition technologies for self-driving cars have to fulfill enhanced requirements in terms of accuracy, unambiguousness, robustness, space demand and of course costs. The paper introduces different levels of automated driving functions according to the SAE standard and derives requirements on sensor technologies. Subsequently, state of the art technologies for object detection and identification as well as systems under development are introduced, discussed and evaluated in view of their suitability for automotive applications.

2.2 AYESHA IQBAL(2020), "OBSTACLE DETECTION AND TRACK DETECTION IN AUTONOMOUS CARS"

This illustrates the history and recent advancements in the field of Autonomous Vehicles with regard to two important concerns that [lays the most vital role in successful implementation and working of an Autonomous Car: Obstacle Detection and Track Detection. The car should be able to detect the obstacles for smooth and efficient working in order to avoid accident and collision. I should also be able to calculate the distance of the obstacle from the car: Similarly, Track Detection is also important as the autonomous car should stay within a predefined track and has to keep itself within the yellow lines on both sides of the road. This chapter colaborates the technologies and advancements that have been presented in the literature till date that deal with obstacle Detection and Track Detection in Autonomous Car/Vehicles.

III. PROBLEM STATEMENT AND PRELIMINERIES

On road obstacle detection is one of the key tasks in the perception system of self-driving vehicles. A deep learning system using region-based convolutional neural network trained with PASCAL VOC image dataset is developed for the detection and classification of on-road obstacles such as vehicles, pedestrians and animals. In this paper, we using python and OpenCV this is opensource and easy to handle and this will help to track the image easily.

3.1 Block Diagram of the Proposed System:

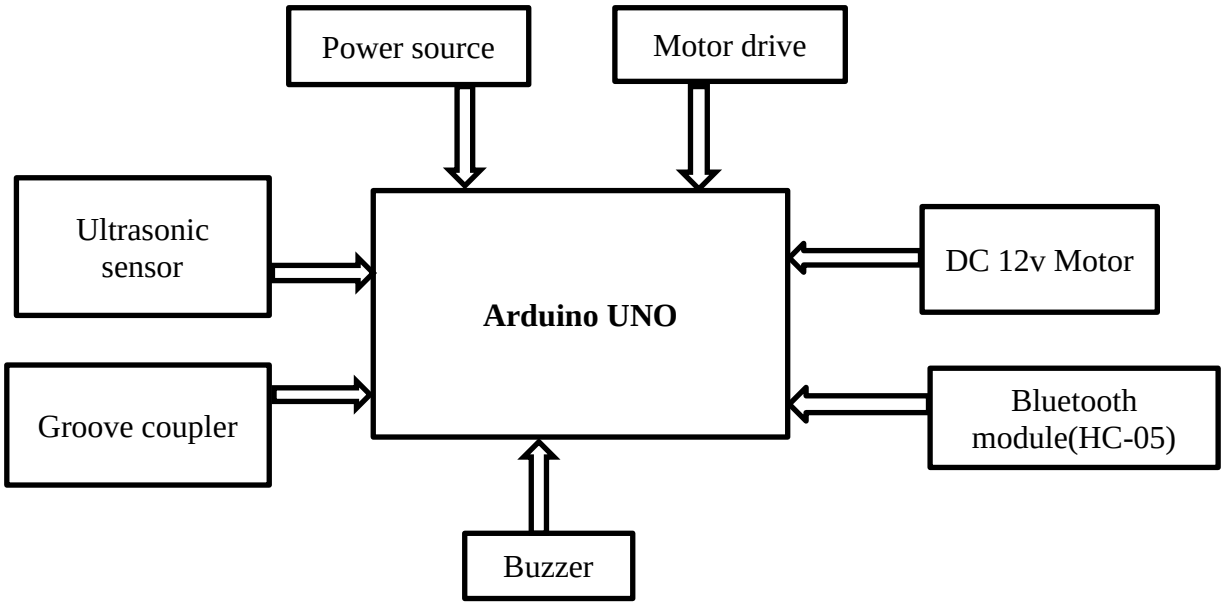

Fig 3.1 Block Diagram of Proposed system

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3.2 Flow Diagram of the Proposed system:

The flow chart explains the working of the system. Firstly , input image is detected by the camera and that image is processed with compared with known image in the database and display which type of obstacles is obtained.

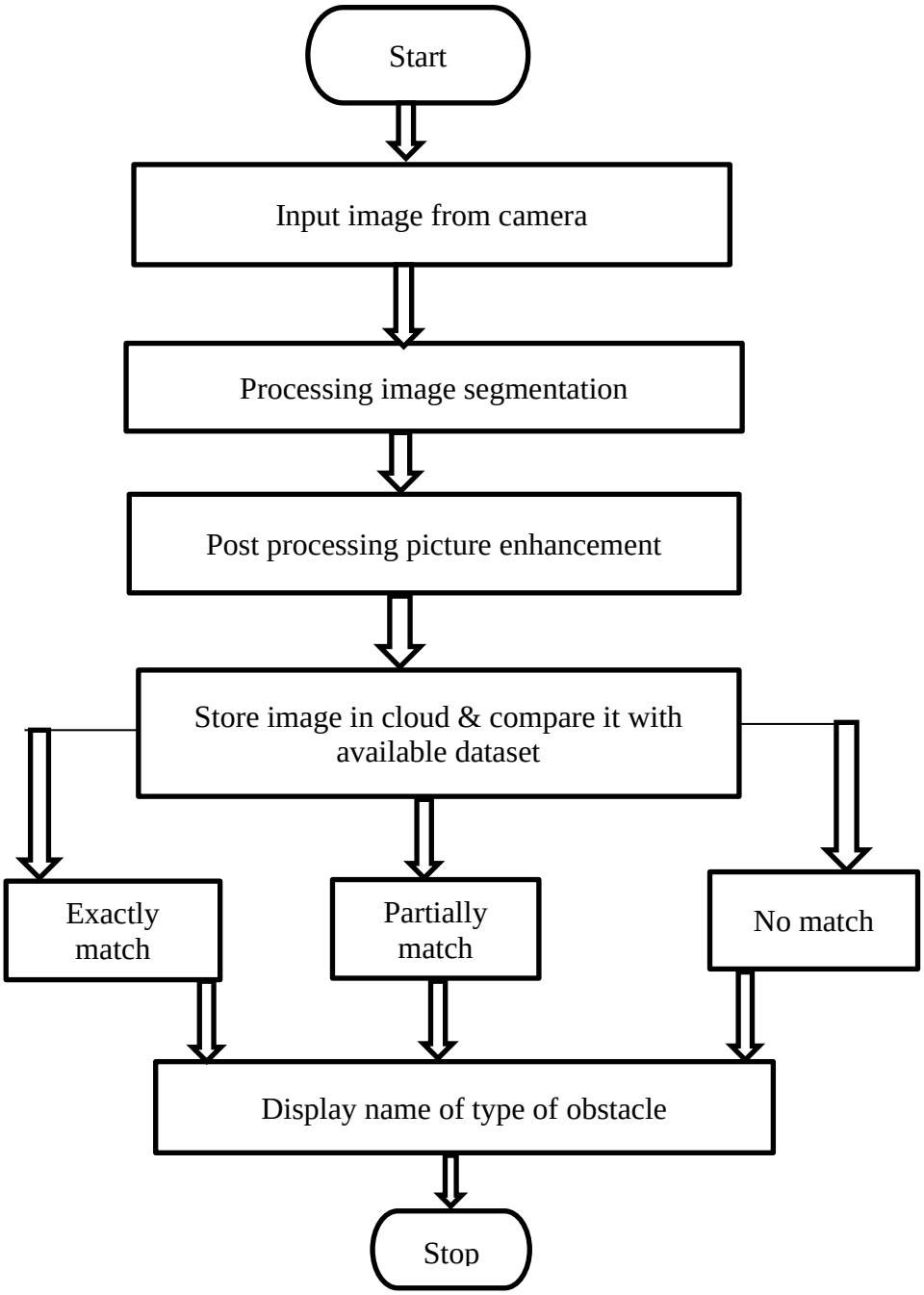

Fig 3.2 Flow Diagram of Proposed System

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IV. RESULT OF THE STUDY:

The result of the system of the proposed system and the design is shown below.

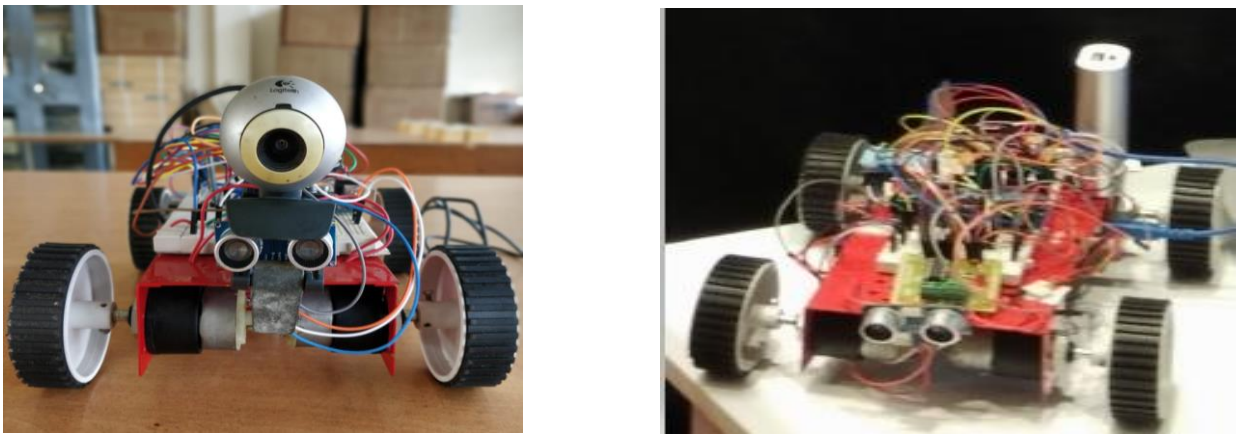

Fig 4.1 proposed system

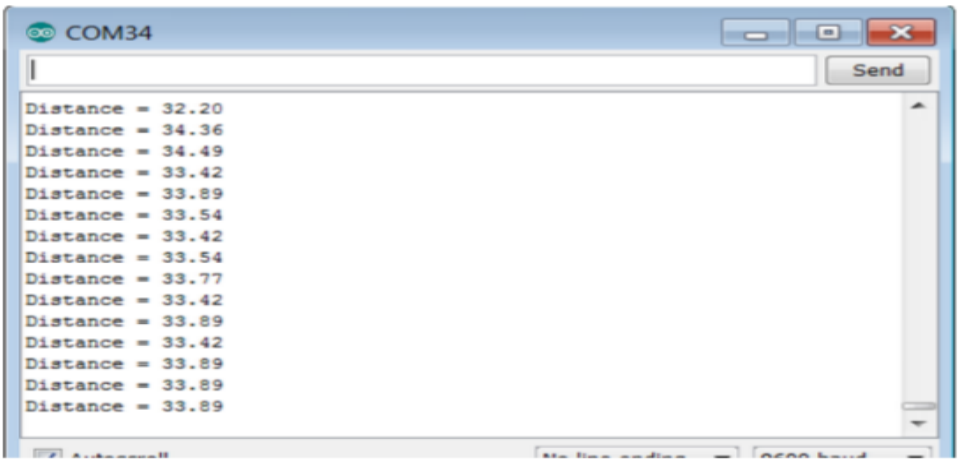

Fig 4.2 Ultrasonic sensor output

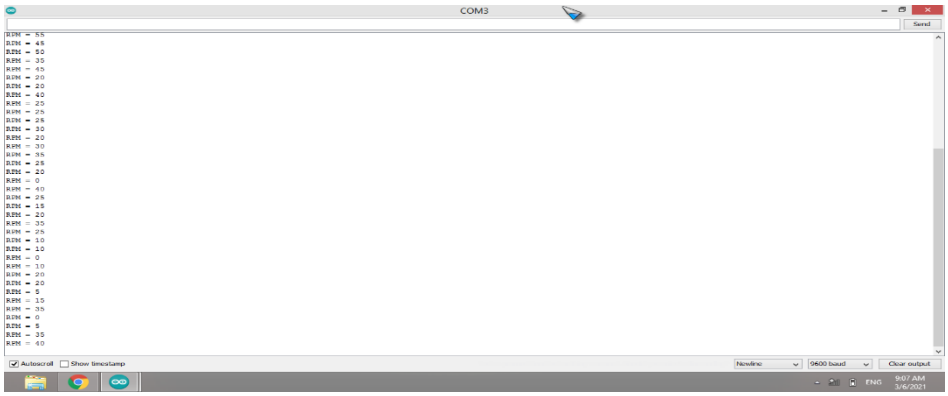

Fig 4.3 Output of Groove coupler

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V. ADVANTAGES:

Using this paper, we can use for the multipurpose. To avoid accident prevention in automobiles, decrease in man work, supervision over workers can be improved, cost effective.

VI. CONCLUSION:

In this project we use Python, Open CV for processing, and its processing time is less. It leads to unnecessary turbulence among people in and around the fire examining the area. Our proposed system is one such monitoring technique that will be easy yet equally effective to implement. After the completion of the code and installed in the Groove coupler and ultrasonic sensor and the output is detected.

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