ROS Autonomous Robot

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Abstract: - Lidar imaging systems are one of the calescent topics in optronics industry. The yearn to sense the surroundings of every autonomous vehicle has pushed forward a race dedicated to deciding the final solution to be implemented using various techniques. The famish of technology has led to the use of the new technology called Lidar. It enables a self-driving car or any robot, to observe the world with exiguous special super powers. The reader is provided with a detailed bibliography containing both relevant books and state-of-the-art papers for further progress in the subject.

Key Words: - ***Lidar imaging, Optronics industry, Autonomous vehicle.***

I. INTRODUCTION

Lidar based car can also be called as robotic cars or autonomous car. It is used for human or object transport by sensing the surroundings, without causing any harm to human beings. Combination of advanced control systems interpret sensory information to identify required appropriate navigation paths, as well as obstacles. Long distance object carriage or trucking can be preferred as the next implementation of this project design. Simply put, the base of this research can be defined as Follows:

- Robots that can be run without human help.
- The creation of LIDAR based robots and cars.
- Working on lidar instead of Radar.
- With the increase in technology, Lidar can be preferred for most of the projects.

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II. EXISTING SYSTEM

This application was developed to monitor and track vehicles. It notifies the user about the movement of the vehicle from one point to another by making use of GPS and Google Maps. The application was built on agile software methodology. Several test cases were considered and experiment was conducted to know the accuracy results. GPS was used to locate the exact location of the vehicle; GSM module was used to communicate with the vehicle and RFID was combined for additional security. The application consists the latitude, longitude and altitude data which are the location coordinates. This data is being transmitted continuously to the cloud database. The Android application is built using Arduino Studio which consists of features like location sharing, real-time data and notification. Google firebase was the cloud storage that was used for storing the data. Several tests were carried out to measure the accuracy by comparing the results from the application and manual distance.

III. PROPOSED SYSTEM

In proposed system, Solar panel is used as renewable resource of power supply and the communication can be done with the help of the wireless communication network. In this system, the robot is monitored using the CMOS camera. Humidity detector

and camera in it, it can silently enter into enemy area and send us the live information about the object with the help of camera.

IV. ADVANTAGE OF THE SYSTEM

- Robots that can be run without human help.
- The creation of LIDAR based robots and cars.
- Working on lidar instead of Radar.
- With the increase in technology, Lidar can be preferred for most of the projects.

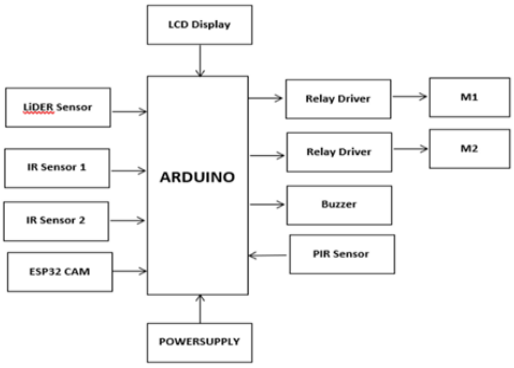
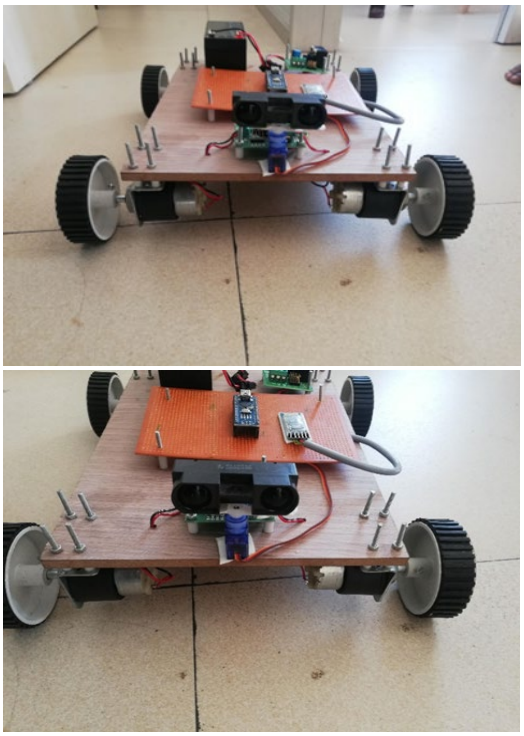


Fig.1. Working Connection Diagaram



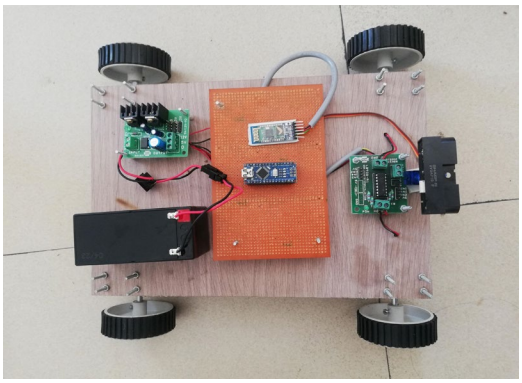


Fig.2. Output

V. CONCLUSION

We have tried to describe in detail the different configurations of lidar imaging systems available for autonomous vehicles. Despite the discussion becoming biased towards cars because of the rising activity in the field, similar considerations to the ones presented here may be stated for maritime or aerial vehicles. Were viewed and compared the three main working principles underlying all lidar measurements, to then overview the main strategies involved in imaging, grouped into scanners (mechanical, MEMS and OPAs) and detector arrays (flash and TOF approaches). Afterwards, we tried to overview the principal considerations related to sources and photo-detectors used in lidar imaging systems units at present, showing its advantages and disadvantages.

Additional functionality to implement the classification of vehicle types i.e, car, truck, and commercial truck. And to send SMS to higher authority when the vehicle exceeds the speed limit is being planned as future scope.

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