

Mapping of autonomous vehicle system

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Abstract -Automation has become the core part of modern technology, no company is able to survive in a competitive market without automating its operations. In fact, the term automation means use of some automated machineries to operate the system without the use of human power. Automation is the most wanted thing that is used to manage systems and to control the processes, thus leading to reduce the necessity of human intervention. Nowadays, manufacturers seek to implement methods of automation appropriate to their requirements and purposes. Various companies automate their activities for numerous reasons. The main aim of one company is to increase their productivity and gain in various aspects. In that list, automation plays a vital role. Since, automation improves the product's quality and reduces most of the human errors. Other reasons for automation include hazardous working environments and high cost of human labour in many areas. Automation is implemented in many fields including hospitals, manufacturing and pharmaceutical industries. Recent advances in autonomous vehicles have allowed mapping and exploration in difficult to access areas that were previously not possible using unmanned ground vehicles. Autonomous vehicles must be designed to operate autonomously with no prior information about the environment.

Key Words:

Hardware Tools : 360 degree wheel with shock absorber , normal wheel-2 with shock absorbers , 2*2 vehicle system , Ultrasonic sensor Lidar sensor , STM-32 controller

Software Tools : Solid Works

1. INTRODUCTION

To navigate in such environments, the AVS must be capable of doing simultaneous localization and mapping as it explores the area. Mobile robot exploration in indoor environments has been extensively researched in the past. One of the key parts of automation in a manufacturing process is Automated Vehicle System (AVS). The automatic mapping capability is an interesting feature of AVS. This will be used to reduce the road accidents. A street car crash is any damage because of accidents starting from, ending with or including a vehicle in part or completely on an open street. It is anticipated that street traffic wounds will climb to the third position continuously 2020 among driving reasons for the worldwide sickness trouble. The Global status report on street security 2018 demonstrates that, worldwide the absolute number of street traffic deaths remain unsatisfactorily high at 1.24 million every

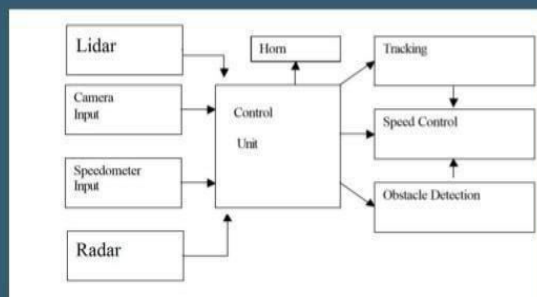
year. Street traffic wounds are the main area of death among youngsters, matured 15–29 years.

2. Body of Paper

Youngsters, walkers, cyclists and more established individuals are among the most helpless of street clients comprising half of those withering on the world's streets. Dominant part of the world's fatalities on the streets happen in low-salary and centre pay nations, even though these nations have roughly 50% of the world's vehicles. India is no special case and information demonstrated that more than 1.3 lakh individuals kicked the bucket on Indian streets. This system uses various components and sensing materials to sense the things that are happening around the vehicle to minimize the accidents and give more clarity on routes. To create map for a particular area and convert it into machine code and interface it with the autonomous vehicle system. To abstract the google map image for the area, process it digitally and convert it into code and automatically run the vehicle by interfacing the code with hardware. The map will be processed with the latitude and longitude degrees. The interface is done with the STM-32 microcontroller.

Block diagram -1:

WORKING BLOCK DIAGRAM:



1. The map information predicts the coming driving path by considering this vehicle position, driving conditions, and road information. A route inserted into the navigation system may be sent.

2. It'll use the Map information to form a map horizon. as an example, the horizon can describe the various pathway markings, curves and speed objections for the five kilometer ahead.

3. The autonomous driving system then fuses this map information with its detector observations to create AN environmental model. With this imitation, the autonomous vehicle system will set up its next self-driving maneuver.

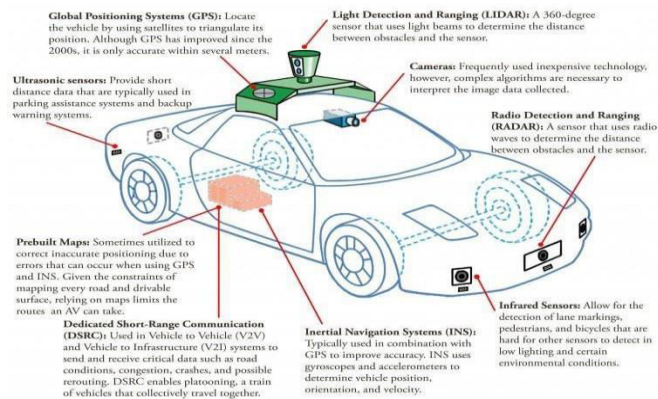
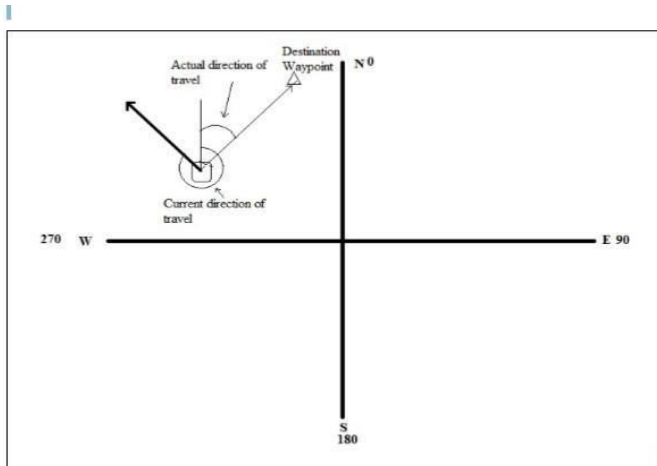


Fig -1: Figure

Charts



3. CONCLUSIONS

The solutions are mainly focused on ensuring clarity of routes and vehicle which reduces the men and machine damage but all these solutions is used for solving different problems in different ways but an integrated module of all these system will increase the safety exponentially. Our proposed solution is to integrate all these sensors and to make it as a single module, this reduces the complexity of the circuits and the space occupied by different sensors and gives different necessary information to ensure the safety of the vehicle.

ACKNOWLEDGEMENT

The futuristic scope is to reduce the number of sensors by using image processing which takes all the information by using pixel comparison and thus the complexity is much more reduced and thus increases efficiency and it becomes more users friendly.

REFERENCES

[1].Wendali ,ZianjieMeng-low cost vector map assisted navigation strategy for autonomous vehicle .

[2].Vahidi, A., &Eskandarian, A. (2016). Research advances in intelligent collision avoidance and adaptive cruise control. IEEE transactions on intelligent transportation systems, 4(3), 143-153.

[3]. Mori.H,Kaneko.K (Jul 2016) 'Image reading system', Vol.02.

[4]. T.Ort,L.Paull(2018)Autonomous vehicle navigation in rural environments without detail prior maps

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C Krishnadass I am pursuing my Bachelor's Degree in Engineering in SNS College of Technology Coimbatore ,Tamil Nadu , my area of interest is machine learning.