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(Check And Manage – Self Driving Car with GPS System)

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ABSTRACT

Self Driving Car is a mobile machine that can detect and follow the line drawn on the floor. Generally, the path is predefined and can be either visible like a black line on a white surface with a high contrasted color or it can be invisible like a magnetic field.

Therefore, this kind of Robot should sense the line with its Infrared Ray (IR) sensors that installed under the robot. After that, the data is transmitted to the processor by specific transition buses. Hence, the processor is going to decide the proper commands and then it sends them to the driver and thus the path will be followed by the line follower robot. TABAR is a line follower robot designed and tested in order to attend at Tabrize line follower robots competition. But it encounter with some technical and mechanical problems. In this Paper, we have illustrated the process of design, implementation and testing TABAR, a small line follower robot designed for the line follower robots competition. The technical and mechanical issues and problems also have investigated.

Road accidents rates are very high nowadays, especially two wheelers. Timely medical aid can help in saving lives. This system aims to alert the nearby medical center about the accident to provide immediate medical aid. The attached accelerometer in the vehicle senses the tilt of the vehicle and the a heartbeat sensor on the user's body senses the abnormality of the heartbeat to understand the seriousness of the accident. Thus the systems will make the decision and sends the information to the smartphone, connected to the accelerometer through gsm and gps modules . The Android application in the mobile phone will send text messages to the nearest medical center and friends. Application also shares the exact location of the accident and it can save time.

Introduction:-

Self drive caris autonomous that means it automatically follows a line which is pre-defined. Generally, it follows a black line on a white surface or a white line on a black surface. Some of the basic operation of a line follower is given below: · Reading the pre-defined line by IR sensor array which is installed on the front-down side of the robot and sends those readings to the Arduino. The ATMega microcontroller which is built in on Arduino analyzes those readings and do the particular operations. · The steering mechanism is simple in this robot. Three wheels are used, two wheels are on the back part connected with the motors and one independent wheel on the front-middle part of the robot. · On Straight line, the speed is fast and on a turn, speed is relatively slow depending on turn angel. Good motor quality and good sensing quality will increase the robot movement performance.

Keywords— Accident detection, alert system, GPS,Line Follower; Problems and solutiosn; Circuit; Actuator; Programing.

OBJECTIVE:-

The main objective of this project is to prevent casualties which happen due to lack of medical assistance in time. Certainly, if the accident happens due to other cases, the used electronic devices will be able to provide the spontaneous message and exact location to police and ambulance in order to recover victims. Avoiding casualties caused by road accidents is the main goal of this paper, with the help of Accelerometer and GPS present in the mobile phones. Based on the data collected from these sensors, which are present in most mobile phones, the location of the accident is sent at the same time of the accident to the friends and relatives which the user allowed and stored, and also to the rescue and emergency services

LITERATURE SURVEY:-

Infrared (IR) technologies (materials, devices and systems) represent an area of excellence in science and technology and, even if they have been generally confined to a selected scientific community, they have achieved technological and scientific highlights constituting„innovation drivers" for neighbouring disciplines, especially in the sensors field.

The development ofschoksensors, initially linked to astronomical observations, since World War II and for many years has been fostered essentially by defense applications, particularly thermo-vision and, later on, smart vision and detection, for surveillance and warning. Only in the last few decades, the impact of silicon technology has changed the development ofschokdetectors dramatically, with the advent of integrated signal read-outs and the opening of civilian markets (EO communications, biomedical, environmental, transport and energy applications).

The history of infrared sensors contains examples of real breakthroughs, particularly true in the case of focal plane arrays that first appeared in the late 1970s, when the superiority of bi-dimensional arrays for most applications pushed the development of technologies providing the highest number of pixels. An impressive impulse was given to the development of FPA arrays by integration with charge coupled devices (CCD), with strong competition from different technologies (high-efficiency photon sensors, Schottky diodes, multi-quantum wells and, later on, room temperature microbolometers/cantilevers). This breakthrousgh allowed the development of high performanceschoksystems of small size, light weight and low cost – and therefore suitable for civil applications – thanks to the elimination of the mechanical scanning system and the progressive reduction of cooling requirements (up to the advent of microbolometers, capable of working at room temperature). In particular, the elimination of cryogenic cooling allowed the development and commercialization ofschokSmart Sensors; strategic components for important areas like transport, environment, territory control and security.

Infrared history is showing oscillations and variations in raw materials, technology processes and in device design and characteristics. Various technologies oscillating between the two main detection techniques (photon and bolometer effects) have been developed and evaluated as the best ones, depending on the system use as well as expectable performances. Analysis of the „waving change" in the history ofschoksensor technologies is given with the fundamental theory of the various approaches.

Highlights of the main historicalschokdevelopments and their impact and use in civil and military applications is shown and correlated with the leading technology of silicon microelectronics: scientific and economic comparisons are given and emerging technologies and forecasting of future developments are outlined

Infrared detectors are in general used to detect, image, and measure patterns of the thermal heat radiation which all objects emit. Early devices consisted of single detector elements that relied on a change in the temperature of the detector. Early thermal detectors were thermocouples and bolometers which are still used today. Thermal detectors are generally sensitive to all infrared wavelengths and operate at room temperature. Under these conditions, they have relatively low sensitivity and slow response.

Photon detectors were developed to improve sensitivity and response time. These detectors have been extensively developed since the 1940's. Lead sulfide (PbS) was the first practicalschokdetector. It is sensitive to infrared wavelengths up to ~3 µm.

Beginning in the late 1940's and continuing into the 1950's, a wide variety of new materials were developed forschoksensing. Lead selenide (PbSe), lead telluride (PbTe), and indium antimonide (InSb) extended the spectral range beyond that of PbS, providing sensitivity in the 3-5 µm medium wavelength (MWIR) atmospheric window.

The end of the 1950's saw the first introduction of semiconductor alloys, in the chemical table group III-V, IV-VI, and II-VI material systems. These alloys allowed the band-gap of the semiconductor, and hence its spectral response, to be custom tailored for specific applications. MCT (HgCdTe), a group II-VI material, has today become the most widely used of the tunable band-gap materials.

As photolithography became available in the early 1960's it was applied to makeschoksensor arrays. Linear array technology was first demonstrated in PbS, PbSe, and InSb detectors. Photovoltaic (PV) detector development began with the availability of single crystal InSb material.

In the late 1960's and early 1970's, "first generation" linear arrays of intrinsic MCT photoconductive detectors were developed. These allowed LWIR forward looking imaging radiometer (FLIR) systems to operate at 80K with a single stage cryoengine, making them

much more compact, lighter, and significantly lower in power consumption.
The 1970's witnessed a mushrooming ofschokapplications combined with the start of high volume production of first generation sensor systems using linear arrays.At the same time, other significant detector technology developments were taking place. Silicon technology spawned novel platinum silicide (PtSi) detector devices which have become standard commercial products for a variety of MWIR high resolution application.

Components used:-

- Dc motor
- Diode
- Capacitor
- mdf
- LED
- Obstacle sensor
- Relay
- Alcohol sensor
- Battery

Advantages

- Entertainment technology, such as video screens, could be used without any concern of distracting the driver.
- Human drivers often bend rules and take risks, even breaking laws, but driverless cars will obey every rule and posted speed limit, making the roads safer for everyone.
- Over 80% of car crashes in the US are caused by driver error. These accidents would be minimized or prevented by the introduction of driverless cars. Drunk and drugged driving would also become a thing of the past.
- Travelers would be able to journey overnight and sleep for the duration.
- Traffic could be coordinated more smoothly in urban areas to prevent bottlenecks and traffic jams at busy times. Commute times could be reduced drastically.

Disadvantages

- Self driving car can move on a fixed track or path.
- It requires power supply.
- Lack of speed control makes the robot unstable at times.

CONCLUSION

Robotics has a significant role in global economy and everyday life. Another concern of robotics research is to be competitive and design patents for global industries according to their nature of applications. The demand of robotics technology is expanding in wide range of applications and human activities, especially for manufacturing, medical, service, defense, and consumer industries. The Designed car has IR sensors, Arduino microcontroller board. Arduino mainly controls the car to follow the line. This self drive car is the prototype of robots for industrial use. By studying this one can build self drive car for industrial use. Performance can be improved by using good materials and great sensing power also improves motor movement. The setup cost of self drive car majorly depends upon the expensive machinery, land, and building and round the clock staff to maintain and use that machinery. In India where the population is humongous and resources are scarce.

Future Scope

➔ **Camera**

- The camera is used to give the information of stop sign and red lights.

➔ **Traffic Signs**

- Three different traffic signs were used as sample traffic signals.

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