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Self driving car

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ABSTRACT-In the modern era, the vehicles are focused to be automated to give human driver relaxed driving. In the field of automobile various aspects have been considered which makes a vehicle automated. Google, the biggest network has started working on the self-driving cars since 2010 and still developing new changes to give a whole new level to the automated vehicles. In this paper we have focused on two applications of an automated car, one in which two vehicles have same destination and one knows the route, where other don't. The following vehicle will follow the target (i.e. Front) vehicle automatically. The other application is automated driving during the heavy traffic jam, hence relaxing driver from continuously pushing brake, accelerator or clutch. The idea described in this paper has been taken from the Google car, defining the one aspect here under consideration is making the destination dynamic. This can be done by a vehicle automatically following the destination of another vehicle. Since taking intelligent decisions in the traffic is also an issue for the automated vehicle so this aspect has been also under consideration in this paper.
An autonomous car is also called a self-driving car or driverless car or robotic car. Whatever the name but the aim of the technology is the same. Down the memory line, autonomous vehicle technology experiments started in 1920 only and controlled by radio technology.

I. INTRODUCTION

Imagine a bus carrying passengers on its own, driving better than any bus driver could do. Imagine a taxi, which can be called through an app installed in your smartphone, which carries you to your destination as fast and economically for you as possible. Imagine vehicles

dedicating to agriculture on their own and without having to rest. Imagine vehicles travelling by themselves, mapping all the places they go by, not only on earth, but also on any rock out there in the universe. Imagine that your own car drives for you and you don't need to care

about, while it drives better than you could ever do. Imagine the possibilities in a world where the vehicles area utonomously driven..

PROBLEM STATEMENT-

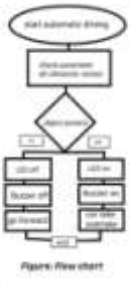
• In order to increase roadway safety autonomous vehicles are under development and are the focus of many research projects Therefore the vehicle is required to be low speed and contain
the ability for passengers to take control.

Project Scope:

1)Reduced Emissions

2) Mobile Businesses

METHODLOGY:



1. We start the motor for drive a car.
2. It checks all system if they work or not then ultrasonic sensor check our path with 20 meter distance .
3. If objects present in front of car ,
4. The LED is on and horn will be start .
5. Then car is overtake of that object.
6. If objects is not present in front of car,
7. Then LED is off as well as horn will be stop to buzzering.
8. Car goes to forward.

HARDWARE DESIGNE

ARDUINO MEGA

ULTRASONIC SENSOR

MOTOR DRIVER

DC GEAR MOTOR

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LED
Horn

Block diagram-

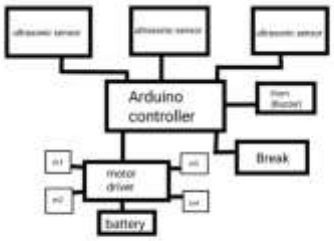

Figure: Block Diagram

Chapter All Detail

In this project we use ARDUINO nano ,motor drive, led, buzzer,,motors, ultrasonic sensor and battery.So I recently was assigned project of a self driving car as my semester's project. In this project my task was to design a car that could do following:through Android Phone.
Avoid Hurdles and Obstacles.Can be Can self-drive.
Don't move if asked to move but there's a hurdle
Honestly I had no Idea how these things work as I've never been into this before. The only thing that I knew was that i had to use Arduino or Raspberry pi.
So, I started with google. I came to know that there projects of this kind are already available on internet with complete codes but the problem I faced was: The projects are separate for each of the thing that I had to fulfill in my project. The good thing was that the programming language of Arduino is based on C and the projects available on internet were mostly Arduino based, since I'm good at C/C++ so I chose arduino and decided to understand the working.
In earlier day we see that Automation can help reduce the number of crashes on our roads. Government data identifies driver behavior or error as a factor in 94 percent of crashes, and self-driving vehicles can help reduce driver error. Higher levels of autonomy have the potential to reduce risky and dangerous driver behaviors.

System Implementation

Entire system operation What is an self driving car? Definition

An autonomous car is a vehicle capable of sensing its environment and operating without human involvement. A human passenger is not required to take control of the vehicle at any time, nor is a human passenger required to be present in the vehicle at all. An autonomous car can go anywhere a traditional car goes and do everything that an experienced human driver does.
The Society of Automotive Engineers (SAE) currently defines 6 levels of driving automation.

How do self driving cars work?

self driving cars rely on sensors, actuators, complex algorithms, machine learning systems, and powerful processors to execute software.Autonomous cars create and maintain a map of their surroundings based on a variety of sensors situated in different parts of the vehicle. Radar sensors monitor the position of nearby vehicles. Video cameras detect traffic lights, read road signs, track other vehicles, and look for pedestrians. Lidar (light detection and ranging) sensors bounce pulses of light off the car's surroundings to measure distances, detect road edges, and identify lane markings.

Hardware Design

System architectures for self-driving vehicles are extremely diverse, as no standardized solution has yet emerged. This module describes both the hardware and software architectures commonly used and some of the tradeoffs in terms of cost, reliability, performance and complexity that constrain autonomous vehicle design.

Arduino Mega

The Arduino Mega 2560 is a microcontroller board based on the ATmega2560. It has 54 digital input/output pins (of which 15 can be used as PWM outputs), 16 analog inputs, 4 UARTS (hardware serial ports), a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button.

Specifications

1. Operating voltage: 5V
2. Input voltage (recommended): 7-12V
3. Input voltage (limits): 6-20V
4. Digital I/O pins: 54 (of which 14 provide PWM output)
5. Analog input pins: 16
6. DC current per I/O pin: 40mA
7. DC current for 3.3V pin: 50mA

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8. Flash Memory: 256 KB, 8KB used by bootloader
9. SRAM: 8 KB
10. EEPROM: 4 KB
11. Clock Speed: 16 MHz

Ultrasonic Sensor

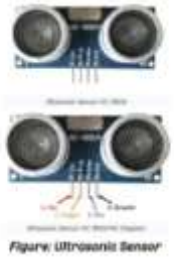

Figure: Ultrasonic Sensor

The HC-SR04 Ultrasonic (US) sensor is a 4 pin module, whose pin names are Vcc, Trigger, Echo and Ground respectively. This sensor is a very popular sensor used in many applications where measuring distance or sensing objects are required.

Motor Driver

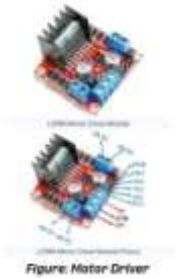

Figure: Motor Driver

This L298N Motor Driver Module is a high power motor driver module for driving DC and Stepper Motors. This module consists of an L298 motor driver IC and a 78M05 5V regulator. L298N Module can control up to 4 DC motors, or 2 DC motors with directional and speed control.

Dc Gear Motor

Figure: DC Gear Motor

Feature

Operating voltage : 3v - 12v dc
Rpm : approximately 100 rpm
No load current : 40 - 80ma
High quality motors
Package contents: pack of 4 x bo motor dual shaft smart car robot gear

Application Details

Driver is in full control of the vehicle.

The Details: Any publicly available car built without any assistive measure or features for the driver. In other words, the driver controls every aspect of the vehicle, from speeding up toslowing down, to ensuring it is safe to change lanes, make turns, avoid obstacles and so on.

Automation: Partial, Vehicle has a combination of assistance features, but the driver still retains full control.The Details: In addition to the features in level 1, level 2 includes automatic braking and advanced assistance with acceleration and steering. Ultimately, these systems are automated, with the driver controlling all other aspects (including override and control of the automated systems).Automation: Conditional, Depending on conditions, the driving tasks are automated but still require a physical driver be present and prepared to control vehicle as necessary.

The Details: The most substantial gap in automation occurs between automation 2 and 3. In automation 3, autonomous systems control many of the driving tasks, but still requires a driver for others. For instance, driving an interstate would be done through the self-driving systems, while exiting to get gas and head to a drive-thru would need to be done by the human driver.

Figure: Automation

Automation: High, The vehicle can operate autonomously, but only under specific

II. RESULTS

1:500% increase in lane capacity

The same Rand report also predicts that lane capacity could increase by a staggering 500%.

The State Smart Transportation Initiative only puts this figure at 100% (still an impressive increase), which it says, in turn, could result in a 20% increase in traffic speeds.

2: 40% reduction in travel time

UK citizens' travel time could be reduced by 40%, according to KPMG's Connected and Autonomous Vehicles – The UK Economic Opportunity.

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Fewer accidents mean less traffic congestion, which means a drop in emissions. But this is not just due to a reduction in accidents.

Future of Driving report states that harmful emissions will be reduced by 60% after the advent of autonomous vehicles.

3: 90% reduction in traffic deaths

Yes, you read that right.

The United States Department of Transportation (USDOT) predicts that the rise of driverless cars will see the number of traffic deaths fall drastically. This prediction makes sense when you think about it.In 2017 it reported 37,133 deaths due to vehicle crashes (94% of which are down to human error).

So a 90% reduction would save 30,000 lives in a single year. Eliminate stop-and-go waves by 100%

According to research at the University of Illinois at Urbana-Champaign, autonomous cars could eliminate the waves of traffic created by stop-and-go behavior (where humans, rather than road accidents, develop changes in speeds).

This, in turn, will not only save people time but decrease the time their cars are on the roads and therefore reduce emissions.

III. CONCLUSION:

The transition from self-driving cars with varying levels of autonomy to fully autonomous vehicles is yet to be made. However, modern AI technologies and machine learning development are making rapid leaps forward in this direction, and that is what's driving the industry forward. Top automotive brands such as General Motors, Ford, and Tesla are in the final stages of testing their driverless vehicles which means we are on the verge of seeing a revolutionary change in the way we commute.

IV. FUTURE SCOPE:

Surprising Ways How Driverless Cars Will Change Our Future:

Most people would agree that driverless cars are the future. With the recent leaps and bounds made in the self-driving car industry, very few people would be bold enough to dispute the fact that these cars will reduce the number of road accident fatalities. Research has shown that the number of U.S. deaths resulting from road accidents could be reduced by more than 90% by the year 2050 because of self-driving cars.

However, this is not the only effect driverless cars will have on our future. Cars and automobiles, in general, are a huge part of our daily lives and society in general. Surprisingly, as humans we are prone to getting angry as soon as we are behind the wheel. So now the questions becomes will driverless cars make us nicer people?

Such a radical change in the automobile industry will have far-reaching effects on every other aspect of our lives. If we fully adopt driverless cars, here is how things will change:

REFERENCES:

Y. Amit and P. Felzenszwalb, "Object Detection", Computer Vision , pp. 537-542, 2014. ← "What is a Raspberry Pi?", Raspberry Pi , 2019. [Online]. Available: https://www.raspberrypi.org/help/what-%20is-a-raspberry-pi/. [Accessed: 06-Mar- 201] ← D. Velasco-Montero, J. Fernández-Berni, R. Carmona-Galán and Á.Rodríguez-Vázquez, "Performance analysis of real-time DNN inference on Raspberry Pi", Real-Time Image and Video Processing 2018 , 2018. ← W. Liu, D. Anguelov, D. Erhan, C. Szegedy, S. Reed, C. Fu and A. Berg, "SSD: Singlehot MultiBox Detector", Computer Vision – ECCV 2016 , pp.21-37, 2016. ← T.-Y. Lin, M. Maire, S. Belongie, J. Hays, P. Perona, D. Ramanan, P. Dollár, and C. L. Zitnick, "Microsoft COCO: Common Objects in Context," Computer Vision – ECCV 2014 Lecture Notes in Computer Science , pp. 740–755, 201