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VEHICLE THEFT DETECTION WITH ALCOHOL DETECTION,SMOKE DETECTION AND FINGERPRINT IGNITION

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Abstract - *In this project we introduce the acquisition of Vehicle Theft, warning and control systems using IoT and GSM modules. The main project control device is the PIC microcontroller. For this use the vehicle fingerprint access module. GPS is a summary of the Global positioning system. This GPS receiver is able to determine the location where we are in terms of latitude and longitudes. GPS provides data obtained from satellites. With this information GPS communicates with at least three satellites in space. The GPS module also measures the speed of the vehicle. The esp8266 module provides a method of communication between the user and the microcontroller system with notification and alerts.*

***Key Words*: IOT, GPS, Theft detection, Smoke detection sensor, Alcohol sensor.**

1.INTRODUCTION

In this project we are introducing Car Vehicle Acquisition, a warning and control system using IoT and GSM modules. The main control device of the project is the PIC microcontroller. For this use the fingerprint module to access the vehicle. GPS is a summary of the Global positioning system. This GPS receiver is able to determine the location where we are in terms of latitude and longitudes. GPS provides data obtained from satellites. With this information GPS communicates with at least three satellites in space. The GPS module also measures the car's speed. The esp8266 module provides a method of communication between the user and the microcontroller system with notification and alerts.

This project uses an alcohol sensor to detect alcohol, a smoke sensor is used to detect smoke. In this DC car like a car. And this program contains an emergency button used for an emergency.The Esp8266 Wi-Fi module is used to send warning and location information to the blynk app. GPS module is used to track the location of a vehicle. The GSM module is used to send a notification and location message via SMS. And this program gives sound warnings about buzzers. The status of the project will be displayed on the LCD. The main control device of the project is the PIC microcontroller which is connected to the input and output modules and takes the necessary action over the situation. Microcontroller is loaded with the program written in embedded language 'C' to perform the function.

2. LITERATURE OVERVIEW

Vehicle safety (VST) technology in the automotive industry refers to specialized technologies developed to ensure the safety and security of vehicles and their passengers. The name includes a wide range of projects and devices in the automotive world. Notable examples of VST include geo-fence capabilities, remote speed sensor, theft prevention, damage reduction, car-to-car communication, and automotive communication equipment using GPS tracking.

VST models were first used in the 20th century, when they were introduced to the automotive industry in response to legislative efforts to reduce the number of road accidents. Early examples of VST included safety glass, four-wheeled hydraulic brakes, seat belts, and padded dashboards. In 1934, General Motors embarked on a scientific approach to automotive safety by conducting an initial crash test. Gradually, the existing systems are stabilized, followed by the introduction of disk brakes and locking systems. Advanced security systems were first introduced in 1995 with Electronic Stability Control (ESC). Route warning systems were introduced in 1999, and radar assisted adaptive cruise control was introduced in 2005. However, this technology is not a standard installation for all vehicles.

Two types of vehicle safety systems

1.Active vehicle safety system.

2.Passive vehicle safety system.

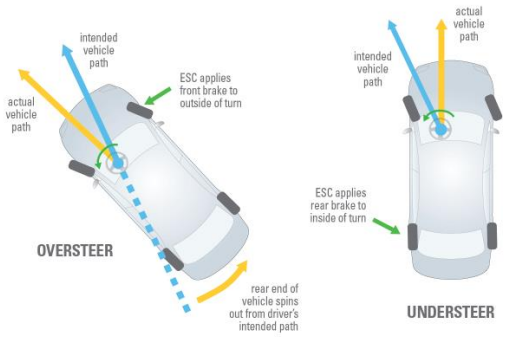
2.1 ACTIVE VEHICLE SAFETY SYSTEM

An effective safety plan works to prevent accidents. These systems always work while driving, and they work continuously to prevent you from getting into an accident. Many functional security features are electronic and computer-controlled. Includes mobility control, electronic stability control, and braking systems. These include advanced driver assistance systems that use sensors such

as a collision warning and departure warning, as well as adaptive cruise control.

2.1.1 ELECTRONIC STABILITY CONTROL(ESC)

Electronic stability control (also known as roll over protection) is a technology that helps keep a car balanced. In severe weather or severe road conditions that could cause the steering wheel to overheat, this technology allows drivers to re-control and prevent potential crashes, roll overs, and fish tails. This is a system that allows drivers to safely get out of a hydroplane. In conjunction with the automatic emergency braking technology (see below), the ESC controls each wheel so that the driver directs his or her direction. To do this, ESC technology uses one break on each wheel, slowing each of the target's speed. Electronic tightness control does not provide drag on the car; instead, it provides balance and temporary control control.



Electronic stability and control(ESC)[1]

2.1.2 AUTOMATIC EMERGENCY AND BRAKING

There are four different automatic transmission and emergency braking technologies. It includes Automatic Emergency Braking (AEB), Crash Imminent Braking, Dynamic Brake Support, and Pedestrian Emergency Braking. This technology to avoid collisions detects vehicles in front of the vehicle and then breaks them in case of danger. Before making any decisions on their own, AEB systems warn the driver of a suspected crash and provide the driver with an opportunity to take action. If the driver does not heed the warning, AEB technology will then apply the brakes in hopes of preventing or reducing the severity of the crash. Dynamic brake support is a technology that supports the brake driver when it is not strong enough. For crash imminent braking, this system automatically applies the brakes to avoid a crash. Drivers do not need to apply the brakes to make a near-crash system work. Emergency braking systems hear pedestrians in front of or near the vehicle and will apply the brakes if drivers do not move to do so. This technology uses radar sensors and front-facing cameras to detect pedestrians, and then apply the brakes in hopes of avoiding collisions. These programs have been available on most vehicles since 2006. Due to the growing popularity, the costs of installing these systems in new cars have dropped and are not expensive to install. However it is more expensive to fix due to the resolution and distance of the cameras and sensors.

Automatic emergency and braking[2]

2.1.3 BLIND SPOT MONITORING

A blind spot is an area outside a car that cannot be seen by the driver sitting in the driver's seat. Each person will have a different viewpoint, and will not be able to see other vehicles in that area. To reduce the risk of conflict-related accidents, many companies have developed technology that alerts drivers to other vehicles near their vehicles. This technology also allows you to see where other vehicles are coming from. Vision-monitoring vehicles use radar sensors and outdoor cameras that alert motorists to the movement and presence of other vehicles in the vicinity.

To alert the driver, blind spot monitoring systems will use one or more warning sounds, seat vibrations, and illuminated warning signs, usually located outside the car's side mirrors on the side where the vehicle is located. Sounds can also be heard when a driver places a turn signal when the vehicle is in a blind spot. Blind surveillance technology has been installed in many luxury cars and newly manufactured vehicles. There are packages available to add blind spot monitoring to vehicles at the time of purchase. One of the natural weaknesses of most of these systems is that they struggle to find fast cars, motorcycles, or slow-moving vehicles.

The Blind Spot Detection (BSD) system can monitor the area and remove heavy load from the driver and avoid dangerous situations. Sensors monitor the road surface in the back and near your car and warn you if you are trying to get out without a gap.

Blind spot monitoring[3]

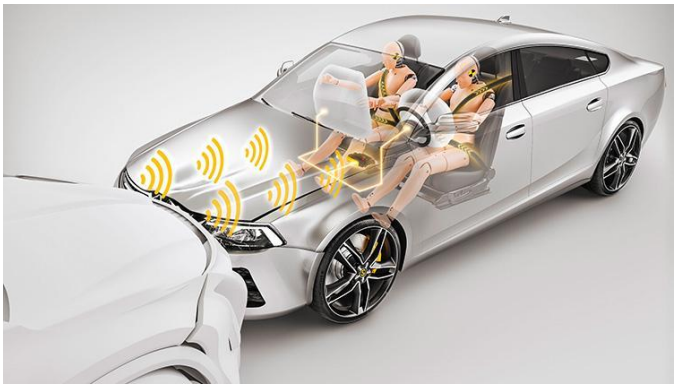
2.1.4 LANE DEPARTURE WARNINGS

Route warning systems are technologies that use underground and wheel-mounted cameras to detect when a tire has crossed a straight line without turning the turning signal. These systems are designed to avoid deviations and the potential dangers of drowsiness. To notify the driver of a route departure, systems may use one or more seat vibrations, warning signal light, and warning sounds (either a small noise or verbal warning from system technology. These systems do not notify the driver. These are times when a change of route occurs without the use of a turn signal, but it is recommended that the seller make this change to prevent damage to the system. Some vehicles are equipped with lane keeping assist, which is the most advanced type of departure warning. If the system detects a potential departure from the route and you do not respond in time, the route maintenance assistant will patiently return you to the route.

Lane departure warnings[4]

2.2 PASSIVE VEHICLE SAFETY SYSTEMS

An idle security feature is a system that does not do any work until it is called to action. These features work in an emergency, and they work to reduce damage and reduce the risk of injury during an impact. These systems include seat belts, airbags, and car construction. These devices work automatically when a car crashes.



Passive vehicle safety systems[5]

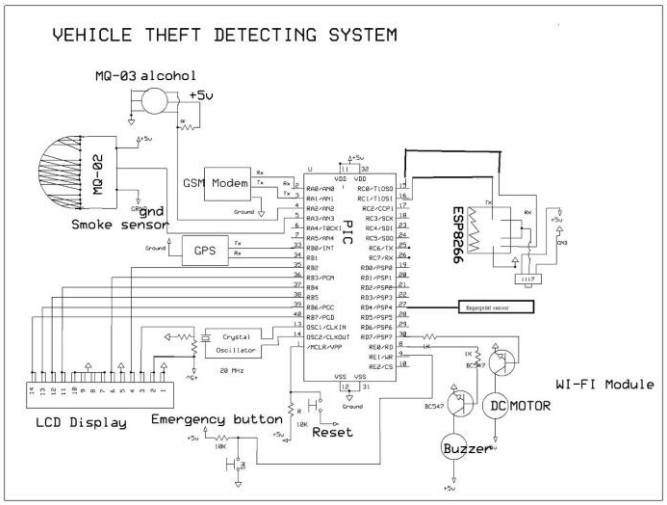
3. PROPOSED METHOD

Embedded system is a combination of software and hardware to perform a dedicated function. Other key devices used in embedded products are Microprocessors and Microcontrollers. Microprocessors are commonly referred to as standard purpose processors as they simply accept input, process it and deliver output. In contrast, the microcontroller not only accepts data as input but also manipulates, connects data to various devices, controls the data and thus gives the end result. The “Stealing Carjacking and IoT and GPS warning system” project can be implemented using Fingerprint Module, GPS, GSM, ESP8266 WI-FI and sensors according to the instructions provided by the PIC sub-controller.

This project uses an alcohol sensor to detect alcohol, the smoke sensor is used to detect smoke. In this DC car like a car. This program contains an emergency button used for emergencies. The Esp8266 Wi-Fi module is used to send notification and location to blynk applications. The GPS module is used to track car location. The GSM module is used to send a notification and location message via SMS. And this program gives sound warnings about buzzers. The status of the project will be displayed on the LCD. The main control device of the project is the PIC microcontroller which is connected to the input and output modules and takes the necessary action over the situation. Microcontroller is loaded with the program written in embedded language ‘C’ to perform the function.

4. EXPERIMENTAL SETUP

From the below diagram it can be seen how different components are connected together to form a safety system for a vehicle henceforth to make it more safe for the users to drive following components which are listed below are the ones which helps to make the system a real thing.



4.1 ESP2866 MICROCONTROLLER

One of the major components of this project is ESP2866 which is why it's explained here.

The ESP8266 is a low-cost Wi-Fi microchip, with built-in TCP / IP communication software, and minimal control power, manufactured by Espressif Systems in Shanghai, China. [5]

The chip first came to the attention of Western builders in August 2014 with the ESP-01 module, developed by third-party manufacturer Ai-Thinker. This small module allows microcontrollers to connect to a Wi-Fi network and make easy TCP / IP communication using Hayes style commands. However, in the beginning, there were almost no English language texts on the chip and the commands were accepted. The very low price and the fact that there were very few external components in the module, suggesting that it could ultimately cost more, attracting more hackers to explore the module, chip, and software in it, as well as translate Chinese texts. [5]

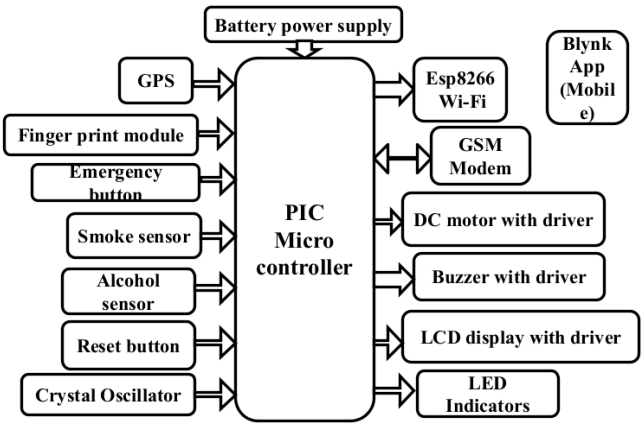
This module has enough on-board processing power and storage capability that allows it to be integrated with other sensors and other device devices with its GPIOs with minimal advanced upgrades and minimal loading during operation. Its high level of on-chip integration allows for small external circuits, including end modules, designed to replace small PCBs.

ESP-01 module by Ai-Thinker with ESP8266EX SoC[6]

5. WORKING

The main control device of the project is the PIC microcontroller which is connected to the input and output modules and takes the necessary action over the situation. Microcontroller is loaded with the program written in embedded language 'C' to perform the function.

Alcohol sensor, smoke sensor, esp8266 Wi-Fi module, GSM, GPS, LCD display, Buzzer, DC motor and transistor driver and fingerprint module meets PIC Microcontroller. In order to access the car the user needs to place a finger on the fingerprint module. When the smoke sensor receives smoke or the alcohol sensor receives alcohol or when a person presses an emergency button this data is processed in a small control. Then the microcontroller opens the buzzer and sends blynk notifications and location and also sends SMS alerts with latitude and longitude values to the user.



The program offers a view mode option; users can activate this mode by sending a simple SMS command. In this mode the speed of the car should be zero. If there is a speed increase the system alerts use GSM and a notification is sent to the browser application. This speed check will continue until the mode is disabled. This mode can be turned off using the GSM command only. The system notifies the user when the vehicle speed exceeds the maximum speed (2Kmph) via SMS messaging using GSM. (Normal speed 20Kmph). So whenever a user finds a car theft, by sending a simple message to the system the user controls the ignition of the car. Any process that occurs in the microcontroller will be displayed on the LCD.

6. CONCLUSION

The availability of each module has been considered and placed with great care. Therefore contributing to the best performance component of vehicle inspection and vehicle tracking as well as pollution control and safety system is fully designed. Second, using highly developed integrated circuits such as ESP8266, GPS module, with the help of growing technology, the project has been successfully

implemented with a unique perspective. if the sensor data exceeds the threshold value the system sends a warning notification. So the project was successfully designed and tested.

7. FUTURE SCOPE

1. In this project we can add an automatic emergency braking system to avoid road accidents.

2. In this project we can also add drowsiness detection in future extension; so we can reduce vehicle accidents.

3. With automation and improved technology more use cases can be generated which will result in creating accidental patterns using machine learning vehicles in future can predict with the help of Artificial Intelligence and pre-warn users in unavoidable times.

4. Adding modernized components might gradually reduce the size of the module more and more which will help it to easily install in old vehicles as well.

5. This can also be implemented in future in such a way that if there is a pattern of a user's intoxication history vehicles might send the alert to concerned authorities already so a huge gap of drink and drive cases can be bridged.

8. References

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[5] https://en.wikipedia.org/wiki/ESP8266

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