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CAR SAFETY AND ALERTING SYSTEM USING INTERNET OF THINGS

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Abstract: Traffic collisions are one of the biggest issues impacting human life all over the world. Governments take a close look at this situation as they take the lives of people every day. The goal of this project is to establish a system for alerting drivers that would be useful in situations of emergency. This system will also prevent situations in which accidents happen. Thanks to the rapid increase in entrepreneurs, the changing economy of this century has made many new facilities possible for the population. Another business concept is car rental, which relies solely on confidence. The software will allow car owners to track how the creditor treats the vehicle. The unit consists of the GPS Module to track the location of the vehicle if there is an emergency, and this emergency can be detected using tilt sensor, an alcohol sensor that does not activate the vehicle if the content of alcohol reaches tolerable levels, and the WIFI module ESP 8266 sends out a warning message and the location to the Thingspeak channel. Speed is one of the underlying causes of a car accident. If the ambulance service could obtain incident reports and respond in time, more lives may have been saved. GPS is now an integral part of a vehicle system. This seminar analyzes a GPS recipient's ability to track the vehicle's speed and to detect a detected speed accident and to send the accident location to a channel provided by the thingspeak services website, where anyone who has the channel id and password will be able to monitor and trace. The GPS monitors the speed of a vehicle and compares it in every second to the previous speed through a microcontroller device. Whenever the speed is below the stated limit, an accident is presumed. The system will then send the location of the accident. This helps reach the rescue service in good time and saves the precious life of man. The development of a transport system was the generative power of human beings to have the highest civilization above earthly creatures. Automotive matters greatly in our daily lives. We use it to go to our office, to contact our friends and family, and to deliver our products. But it can also lead to disaster and can even kill us by accidents. Speed is one of the most important and fundamental driving risk factors. Not only does it affect the severity of a crash, it also increases the risk of a crash. Despite the efforts of various government and non-governmental organizations around the world undertaken through various programs to combat careless driving, accidents happen every now and then. Nevertheless, more lives may have been saved if accident details could be received in time from the emergency services. Efficient automatic accident detection with automatic emergency service notification at the accident site therefore is a prime necessity to save the precious lives of man. This seminar aims to use the GPS receiver's ability to track the vehicle speed and identify incidents at controlled speed and send the location and time of an accident to the Thingspeak channel from the GPS data managed by a microcontroller using a Wifi module.

Keywords: *MQ3,Ultra Sonic Sensor, ADXL335, Thingspeak services.*

I INTRODUCTION

Road incidents are one of the world's most critical issues. Governments take a close look at this situation as they take the lives of people every day. The goal of this project is to establish a system for alerting drivers that would be useful in situations of emergency. This system will also prevent situations in which accidents happen. Thanks to the rapid increase in entrepreneurs, the changing economy of this century has made many new facilities possible for the population. Another

business concept is car rental, which relies solely on confidence. The software will allow car owners to track how the creditor treats the vehicle. The unit consists of the GPS Module to track the location of the vehicle if there is an emergency, an alcohol sensor that does not activate the vehicle if the content of alcohol reaches tolerable levels, and the Wifi module sends out a warning message and the location to each person on the alarm contact list. Speed is one of the underlying causes of a car accident. If the ambulance service could obtain incident reports and respond in time, more lives may have been saved. GPS is now an integral part of a vehicle system. This seminar analyzes a GPS recipient's ability to track the vehicle's speed and to detect a detected speed accident and to send an accident location to an emergency service centre. The GPS monitors the speed of a vehicle and compares it in every second to the previous speed through a microcontroller device. Whenever the speed is below the stated limit, an accident is presumed. The system will then send the location of the accident. GPS acquired together with the time and speed through the use of the Wifi module. This helps reach the rescue service in good time and saves the precious life of man. The development of a transport system was the generative power of human beings to have the highest civilization above earthly creatures. Automotive matters greatly in our daily lives. We use it to go to our office, to contact our friends and family, and to deliver our products. But it can also lead to disaster and can even kill us by accidents. Speed is one of the most important and fundamental driving risk factors. Not only does it affect the severity of a crash, it also increases the risk of a crash. Despite the efforts of various government and non-governmental organizations around the world undertaken through various programs to combat careless driving, accidents happen every now and then. Nevertheless, more lives may have been saved if accident details could be received in time from the emergency services. Efficient automatic accident detection with automatic emergency service notification at the accident site therefore is a prime necessity to save the precious lives of man. This seminar aims to use the GPS receiver's ability to track the vehicle speed and identify incidents at controlled speed and send the location and time of an accident to the Warning Service Center from the GPS data managed by a microcontroller using a GSM network.

II. SCOPE OF PROJECT

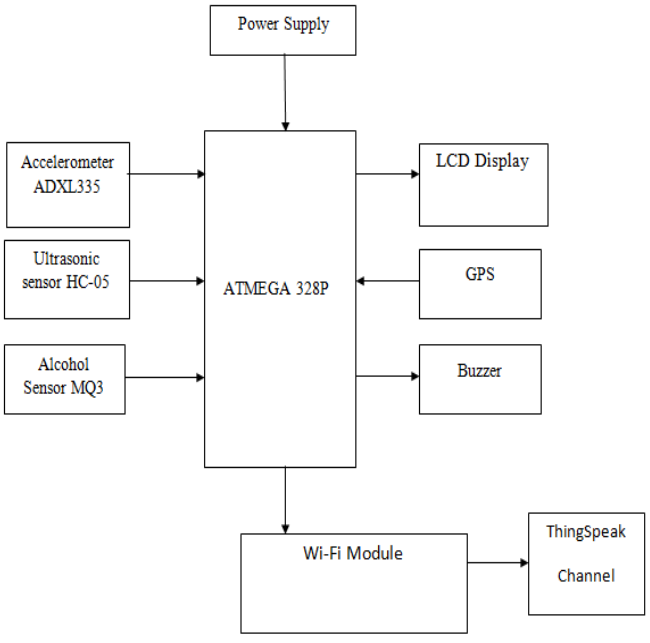
Each year, about 1,35 million people die from road accidents. More than 20 to 50 million people are injured in non-fatal accidents. And many are affected from these injuries. Road crashes cost 518 billion USD worldwide, costing countries 1-2% of their annual GDP. The challenge is to reduce the number of injuries. It is better to do this before an accident occurs. Yet sometimes it's not in our possession. And now, many people with disabilities risk their lives because they are not notified in advance. In the light of the circumstances, the best solution would be an automated intelligent system. We are going to use stronger alcohol detection with the auto ignition system. For a driver, accident warning and location will be sent using the Wifi module and the GPS module connected to the Atmega microcontroller.

III. REVIEW OF RELATED LITERATURE

Many projects addressing similar problems have been done in international level. One such approach has been discussed in the research paper by Leo Cetinski and David Dawson. [13] Use of speed gun for speed detection and LPR software for vehicle recognition has been explained in the paper. A number of different approaches have been used by many researchers to detect speed of moving vehicle. One of the most popular ways of speed detection is based on LASER crossing. Two LASER lights placed on the path of a moving vehicle can be used to determine the speed by measuring the time difference between the crossings. However this approach is now less frequently used for speed detection after the advent of Doppler radar guns. Speed detection using Doppler sensor is based on the principle of Doppler Effect. [17, 30] Commercially available speed guns are based on this approach of speed detection and provide high degree of accuracy. However it did not become widely used until new developments in cheaper and easier to use software was pioneered during the 1990s. The issue of Number Plate Detection is still not solved completely because the accuracy in Number Plate digitization achieved so far is not satisfiable. Different approaches for LPR have been developed but the research still continues for the best result. Initial 14 approaches were based on boundary line properties. Gradient filters were used to enrich boundary lines. Algorithm such as Hough transform

was then used to detect boundary lines two sets of lines parallel to each other were then considered as boundary of the plate. [29] Another approach focused on some properties of plate images such as their position, dimension ratio, brightness, symmetry, angles, etc.[28] Morphological processing were done to detect similar properties in the image so as to locate the position of number plate. Another approach was by using statistical properties of the characters in the plate. This approach is based on finding the regions for Number Plate character based on the the variance of gray level, number of edges, edge densities in the region.[28] This method is very accurate if the number of characters on the plate is fixed.. The research and upgrading of these algorithms continue with many researchers working on the project over a long time. In the case of our country, very few works have been done in this field in the past. One such project on Digitization of Nepali Number Plate was done by the students of IOE, Pulchowk campus.[9] The paper[9] explains the use of neural network in digitization of characters of Nepali Number Plate and the accuracy achieved in Digitization of each character Similar uses have been implemented in many more developed countries so far with the success rate being low. However, in the underdeveloped countries like Nepal; the overall system that we are proposing is not even in the discussion.

IV. BLOCK DIAGRAM



V. PRESENT SCENARIO

There have been many projects dealing with similar problems at international level. Leo Cetinski and David Dawson discussed one such approach in the research paper. [13] The paper explained the use of speed gun for speed detection and vehicle recognition LPR software. Many researchers have used a number of different approaches to detect the speed of moving vehicles. LASER crossing is one of the most popular methods for speed detection. The speed can be determined using two LASER lights on a moving vehicle's path by measuring the time difference between the crossings. However, this approach is now less commonly used after the arrival of Doppler radar guns to detect speed. Doppler Sensor speed detection is based on the Doppler Effect theory. [17, 30] This is the basis for commercially available speed guns and provides a high degree of accuracy. Automatic identification of vehicle numbers dates back to the mid-1970s. This device was first conceived by the UK Police Technological Research Division in 1976. Systems were in use until 1979 and contracts were given to produce industrial systems first at EMI Laboratories, and then at CRS (Computer Recognition Systems) in Wokingham, UK. This was not commonly used until new advances in simpler, easier-to-use applications were created in the 1990s. The problem of number plate detection is still not fully resolved because the accuracy achieved so far in number plate digitization is not satisfactory. There have been different approaches to LPR, but the work continues to produce the best results. Original 14 methods focused on boundary line characteristics. To enrich boundary lines, gradient filters were used. Two sets of lines parallel to each other were then used as boundary lines. algorithms like Hough transform were then used to identify the boundary lines. [29] Some of the properties of panel images, such as their position, dimension ratio, brightness, symmetry and angles were further explored[28]. Morphological processing was carried out to detect similar properties in the image in order to identify the number plate position. Another method was to use the statistical character properties of the plate. This approach is based on finding the regions for the number plate character based on the variance of the gray level, the number of rims and the edge densities in

the region[28]. The development and improvement of these algorithms continues for a long time with the efforts of several researchers. In our country, very little work has been done in the past in this field. The IOE students on the Pulchowk campus were one such project for the digitalisation of the Nepali Number Plate.[9] The paper[9] describes the usage of the neural network to digitize Nepali number plate characteristics, and the precision achieved in the digitalisation of each character Similar usage has so far been applied in many more industrialized countries with a low success rate. However, the general system we are proposing is not even under discussion in underdeveloped countries such as Nepal, Bhutan and several regions of India as well.

VI. CONCLUSION

Research to improve this type of safety device will minimize the number of incidents caused by drivers intoxicated by alcohol and save human life due to unexpected circumstances. The proposed car safety system is based on different type of sensors to collect the car parameters, process them and transmit them at any time, anywhere, to the corrective decision using the WIFI module and GPS modem wireless communications and then a website or a webapp can be built, where the location data and a warning message can be sent as soon as the trigger condition occurs. The position can be transmitted through a tracking device using GPS to cover geographical co-ordinates in the region. A tilt sensor, which is used as a main module in the device, can detect the accident. Several distance sensing sensors can be installed on each sides of the car provide facilities such as collision avoidance and parking systems. This proposed program, however, has faced cost, energy and communications challenges and low network coverage and speed limitations due to developing infrastructure. Implementation of the proposed system and the adequate and accurate performance monitoring of the safety system. The comparison of the system proposed with the existing system will help to demonstrate the greatest improvements in the system proposed.

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