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Compact embedded system based locator, detector, and dimmer Red box

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Abstract— As many applications like vehicle tracking, alcohol detection, accident detection, automatic dimming of light is based on sensor technology and microcontroller using embedded programming it is impossible to bring all these applications in a compact way now-a-days all these are most required in road safety and personal safety. On using all these individual systems is not a possible one. The main goal of the project is to develop a system which uses the sensor and embedded system based controller unit of the automobile which executes with respect to the signal sent by the controller unit. Here the controller unit is used to control the various parameters of the automobile and sensors will pass information to the controller unit. GPS are employed for locating the automobile location. The sensor technology employs the function of vehicle tracking, alcohol detection, accident detection, automatic dimming of light are combined by the single controller unit

Keywords— Accident identification, Vehicle tracking, Alcohol detection, Dimming of light, GPS, Sensors

Methodologies: This project is designed to consist by following blocks,

Application and Sensor used:

- A. Control the theft- Microcontroller, Control the speed- (fuel valve connection)
- B. Location identification- GPS system
- C. Try to prevent the accident before- Health sensor , Piezo Electric Sensor
- D. brightness and piezoelectric- Light brightness sensor

I. INTRODUCTION

According to the recent survey for every 3 minutes, an Indian dies in a road accident. Alcohol is one of the leading causes of accidents, leading to many injuries and deaths. People who have had an accident while drunk may be less likely to seek medical help. Younger people are more likely to have an alcohol related accident than older people. Immediate aid is needed for the victim. According to National Crime Records Bureau Report. Auto Theft (1,00,255) cases accounted for 35.2% of all Theft cases (2,85,043). 28.4% of stolen motor vehicles (28,126 out of 98,930) were recovered during 2007 out of which only 22.0% (6,181 out of 28,126) could be co-ordinate (rightful owner traced).The motorized vehicle causes more the number of accidents. Two wheelers accounted highest share in the road accident (23.8%). Some can be prevented when the treatment given immediately. On the other hand most of the accidents happened due to the over light intensity the public perceptions of automotive headlamps especially in headlamp glare. The theft has increased now it is difficult to find a vehicle after theft. By GPS it is a possible one.

A. Background Information

This System is combination of multiple systems using Embedded system Module application innovated. It utilizes the uses of microcontroller to provide the safety functions in any vehicle. The wireless characteristics of the system to be unreachable to the vehicle thieves seemed to be a problem to the community upon their vehicle safety. The automotive theft and the hijackings had been taken place by common ways of stealing vehicle .This is done by deactivating the alarm or steering wheel lock by cutting wires, but these alarms proposed in this paper would sound effective. Accident identification method is one of the existing systems but that did not have the proper identification that system identify only the area it did not show the place. Light brightness controller old system but in this project we introduced automatic system, it collators the accident.

B. Drawbacks

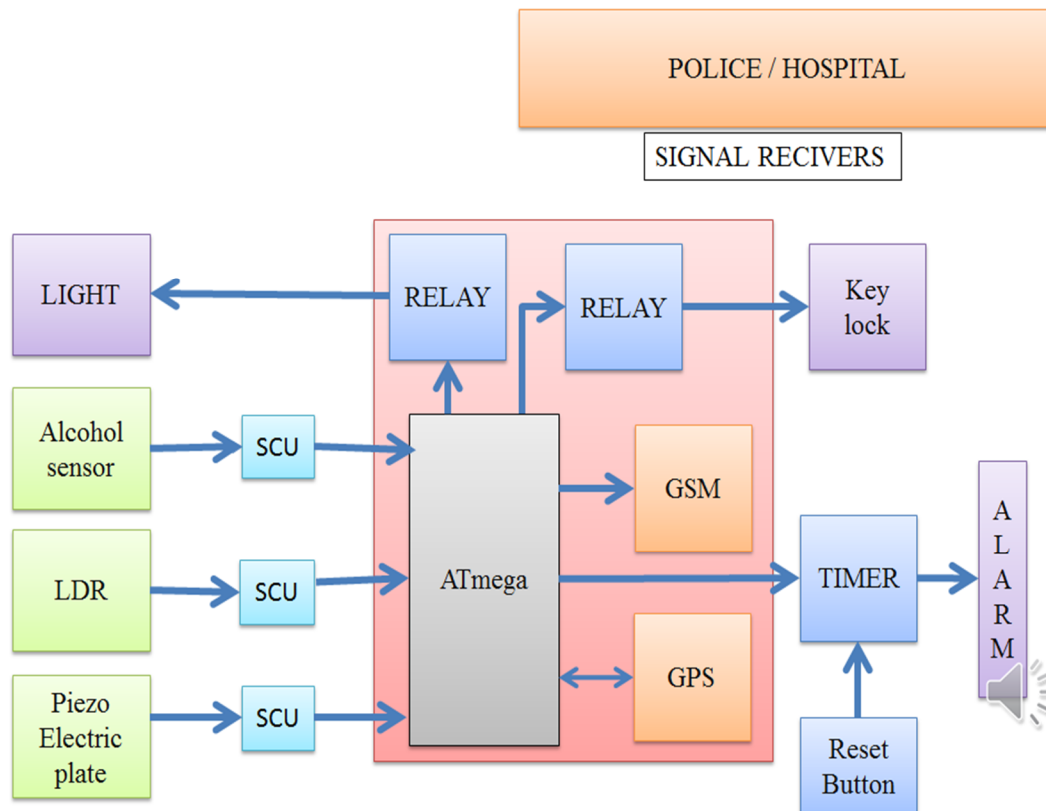
Different methods have been implemented to overcome the problem of the security system .In excising system it have high cost that efficiency also less but that system control only simple problem it need more space that efficiency also less. People they did not follow the traffic rules properly so we introduce the automatic traffic control system in this project. Other existing systems are only identifying the problem but it takes more time for control that problem. The new techniques and the methods used to secure the automotive have been identified. The functions of each and every module have been studied. These two modules are implemented in the Real time

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which makes this project to be a society concern project

II. BLOCK DIAGRAM

Block diagram



A. Alcohol Sensor:

MQ303A is semiconductor sensor is for Alcohol detection, it has good sensitivity and fast response to alcohol, Suitable for portable alcohol detector.

Sensor characteristics:

High sensitivity to alcohol and small sensitivity to Benzene.

High sensitivity

Fast response

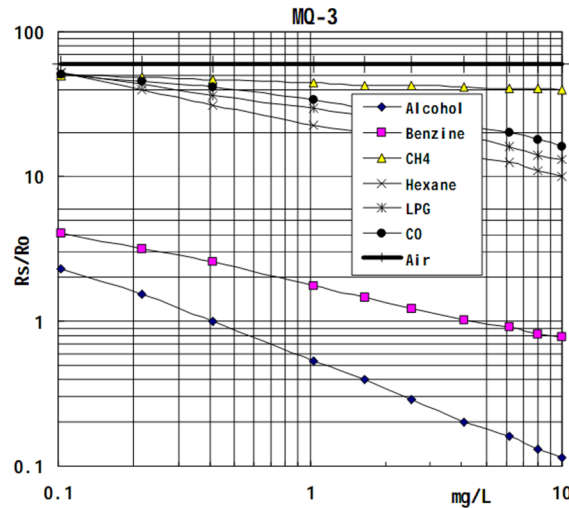
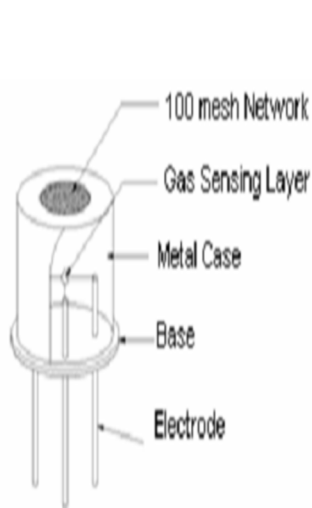
Long life and low cost

Mini Size

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Configuration:

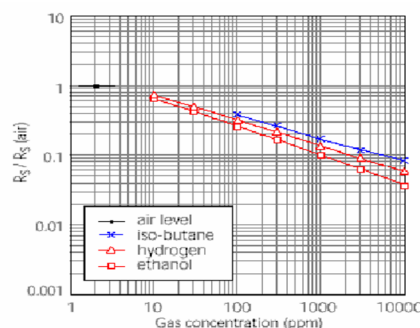
sensitivity characteristics: sensor:



B. Sensitivity Adjustment

Resistance value of MQ-3 is difference to various kinds and various concentration gases. So, when using These components, sensitivity adjustment is very necessary. Sensitivity characteristics of the Gas sensors are expressed by the relationship between the sensor resistance and gas Concentration. The sensor resistance decreases with an increase of gas Concentration based on a logarithmic function.

C. Sensitivity characteristics



D. Light Brightness Sensor (LDR)

Ambient light sensors automatically adjust the backlighting of the instrument panel and various other displays in the vehicle according to the varying available or ambient-light conditions. It also served in electronic equipment's like Laptop's, cell phones and LCD TV's to bring natural lighting solutions. in this project the light sensor is programmed for automatic dimming of light for

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preventing the over intensity of light which leads to accidents.

E. Piezoelectric Sensor

The basic thing in piezoelectric concept is piezoelectricity in which there are two methods available

Direct effect

Converse effect

Direct effect was employed in sensors, which is of the principle of converting mechanical energy to the electrical energy. Since we need the electrical output the direct effect was preferred.

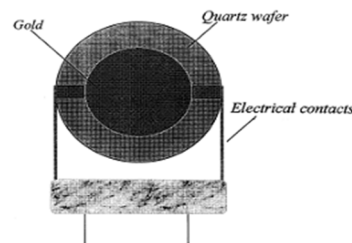
F. Piezoelectric vibrator sensor

Characteristics:

It is very simple, accurate, reliable

It has the high sensitivity of intensity

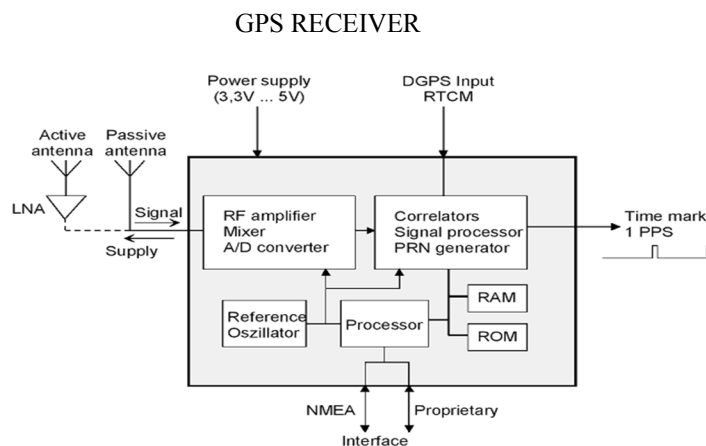
It has limited detection area



G. GPS system

GPS tracking device: The device fits into the vehicle and captures the GPS location information apart from other vehicle information at regular intervals to a central server. The other vehicle information can include fuel amount, engine temperature, altitude, reverse geocoding, door open/close, tire pressure, cut off fuel, turn off ignition, turn on headlight, turn on taillight, battery status, GPS tracking server: The tracking server has three responsibilities: receiving data from the GPS tracking unit, securely storing it, and serving this information on demand to the user.

User interface: The UI determines how one will be able to access information, view vehicle data, and elicit important details from it.

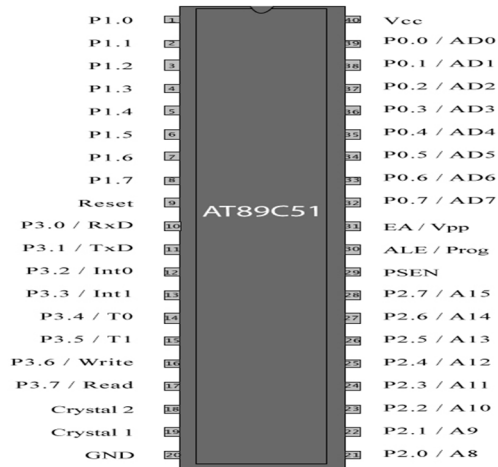


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H. Microcontroller

Micro-controllers are useful to the extent that they communicate with other devices, such as sensors, Motors, switches, keypads, displays, memory and even other micro-controllers. Many interface methods have been developed over the years to solve the complex problem of balancing circuit design criteria such as features, cost, size, weight, power consumption, reliability, availability. Markets for microcontrollers can run into millions of units per application. At these volumes of the microcontrollers is a commodity items and must be optimized so that cost is at a minimum. Semiconductor manufacturers have produced a mind-numbing array of designs that would seem to meet almost any need.

Pin Diagram for Microcontroller



Economical Feasibility

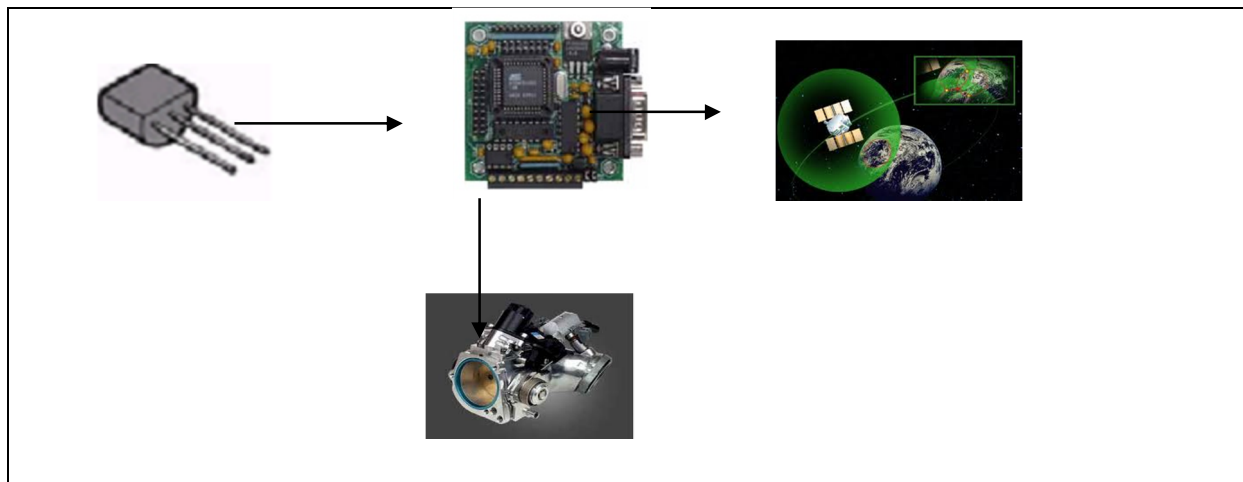
The economic feasibility for this current phase is given as follows.

Hardware	Required numbers	Cost
Microcontroller	1	1500
ALCOHOL SENSOR	1	100
LDR SENSOR	1	30
PIEZO ELETRIC PLATE	1	50
GPS AND GSM SYSTEM	1	1750
LCD DISPLAY	1	500
RELAY	1	60

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III. MICROCONTROLLER TO SENSOR INTERFACING TECHNIQUES

Many interface methods have been developed over the years to solve the complex problem of balancing circuit design criteria such as features, cost, size, weight, power consumption, reliability, availability, manufacturability.



A. Software Description

Effective programming in a software leads to the efficient usage of electronic hardware in an effective manner. The Embedded C programming is chosen to program the ATMAL Microcontroller. The verification of the code is done using the MP LAB software.

B. Front End of MP Lab via Hyper Terminal

The connections are given as per as the circuit diagram. The RS232 pin is provided to the Personal Computer. The Hyper-terminal window is opened. The Connection of hyper-terminal window is shown in the figure 4.1

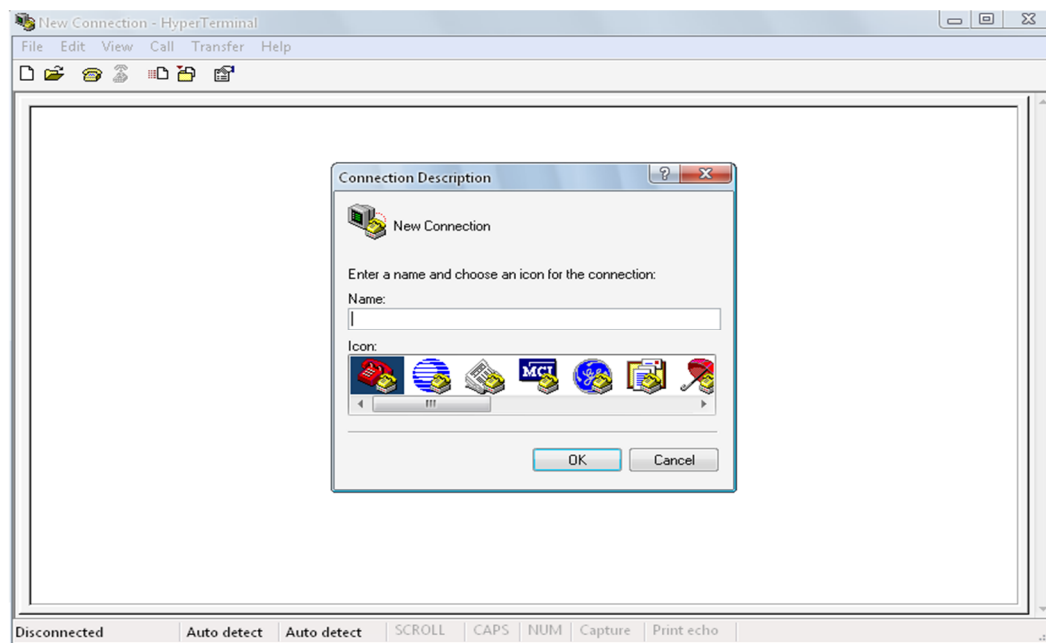


Fig.4.1 Connection Establishment in Hyper-Terminal

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The connection establishment leads the user to the connection properties toolbox in which the desired baud rate and bits selection are made. The property window of hyper terminal is shown in the figure 4.2.

IV. FUTURE ENHANCEMENT

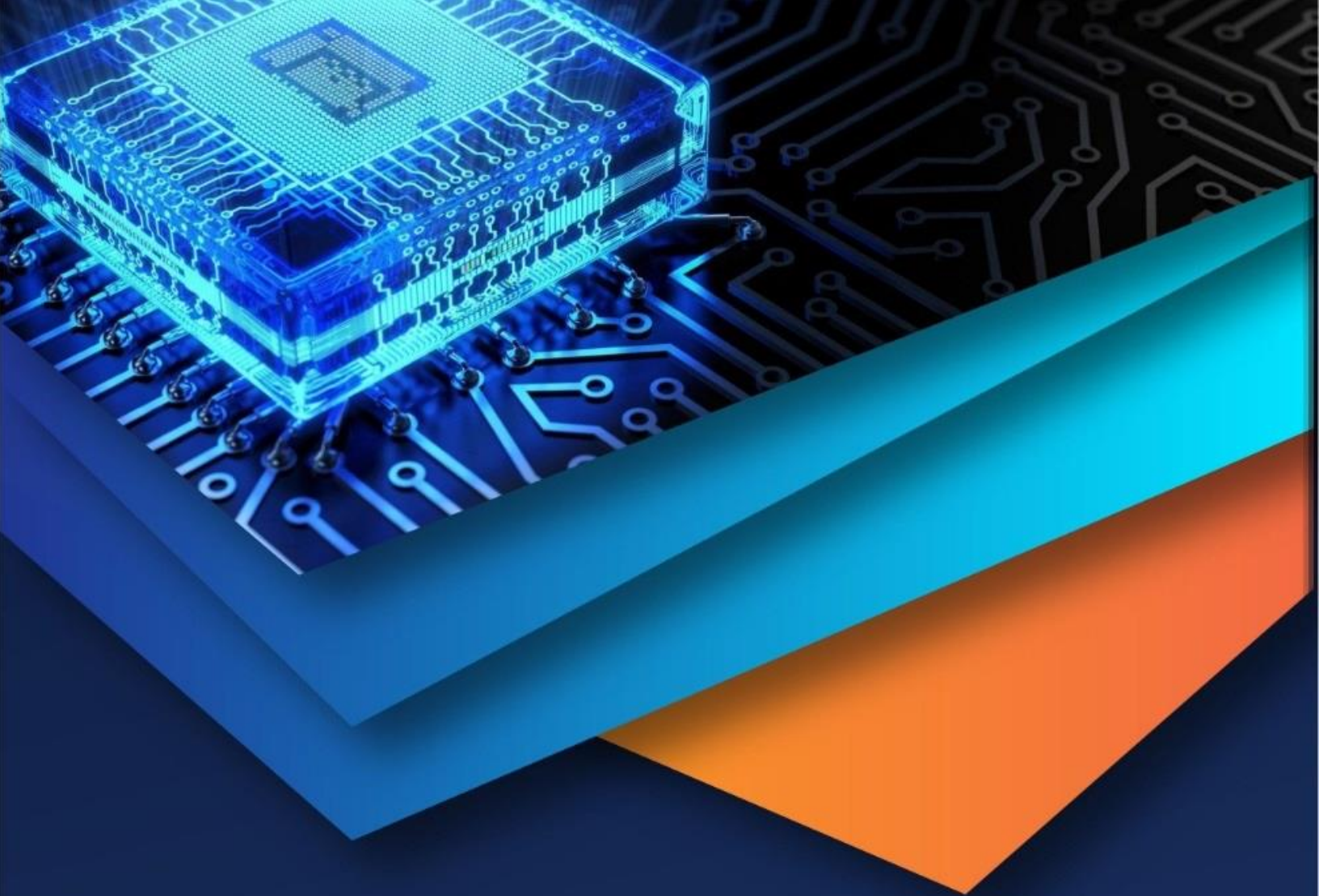
- A. It is used to maintain database of all vehicle in revenue department office, so that, the traffic rules and regulation are made compulsory and those who trespassers are punished now and then.
- B. Today traffic signals are operated only based on the timing already has been set and they do not operate based on the number of vehicles in the signal.
- C. By using this system we can operate the signal based on the number of vehicles in the signal at all situations. This will help in saving time and help in preventing traffic from being stagnant.

V. CONCLUSION

This project is very much use full in reducing the accidents, preventing the theft of vehicles, drunken driving, over intensity light, locating the position of vehicle in general for a complete safety of automobile while driving and after driving. This system is working based on microcontroller, sensor and GPS. Hence it is easy to find the location of the accident place and take the immediate action where the vehicle is located currently

REFERENCES

- [1]. G. Acampora, D. J. Cook, P. Rashidi, and A. V. Vasilakos, "A Survey on ambient intelligence in healthcare," *Proc. IEEE*, vol. 101, no. 12, pp. 2470–2494, Dec. 2013.
- [2]. M. Yu, Y. Yu, A. Rhuma, S. M. R. Naqvi, L. Wang, and J. A. Chambers, "An online one class support vector machine-based person-specific fall detection system for monitoring an elderly individual in a room environment," *IEEE J. Biomed. Health Informatics*, vol. 17, no. 6, pp. 1002–1014, Nov. 2013.
- [3]. M. Yu, A. Rhuma, S. M. Naqvi, L. Wang, and J. Chambers, "A posture recognition-based fall detection system for monitoring an elderly person in a smart home environment," *IEEE Trans. Inf. Technol. Biomed.*, vol. 16, no. 6, pp. 1274–1286, Nov. 2012.
- [5]. X. Zhang, H. Uliyar, L. Farfan-Ramos, Y. Zhang, and M. Salman, "Fault diagnosis of automotive electric power generation and storage systems," in *Proc. IEEE Int. Conf. Control Appl.*, 2010, pp. 719–724.
- [6]. H. M. Zhang and W. Shen, "Numerical investigation of stop-and-go traffic patterns upstream of freeway lane drop," *Transp. Res. Rec.*, vol. 2124, pp. 3–17, Feb. 2009.
- [7]. C.-W. Tan, S. Park, H. Liu, Q. Xu, and P. Lau, "Prediction of transit vehicle arrival time for signal priority control: Algorithm and performance," *IEEE Trans. Intell. Transp. Syst.*, vol. 9, no. 4, pp. 688–696, Dec. 2008.
- [8]. C.-H. Wei and Y. Lee, "Development of freeway travel time forecasting models by integrating different sources of traffic data," *IEEE Trans. Veh. Technol.*, vol. 56, no. 6, pp. 3682–3694, Nov. 2007.
- [9]. S. R. Messera, J. Agzarianb, and D. Abbott, "Optimal wavelet denoising for phonocardiograms," *Microelectron. J.*, vol. 32, no. 12, pp. 931–941, 2001.
- [10]. G. R. Cooper and C. D. McGillem, *Probabilistic Methods of Signal and System Analysis*. Oxford, U.K.: Oxford Univ. Press, 1999.
R. Chellappa, X. Zhang, P. Burlina, C. L. Lin, Q. Zheng, L. S. Davis, and A. Rosenfeld, "An integrated system for site model supported monitoring of transportation activities in aerial images," in *Proc. DARPA Image Understanding Workshop*, 1996, pp. 275–304.
- [11]. N. S.D.Brito, B. A. Souza, and F. A. C. Pires, "Daubechieswavelets in quality of electrical power," in *Proc. 8th Int. Conf. Harmonics Quality Power*, 1998, vol. 1, pp. 511–515.
- [12]. D. Keren, D. B. Cooper, and J. Subrahmonia, "Describing complicated objects by implicit polynomials," *IEEE Trans. Pattern Anal. Machine Intell.*, vol. 16, pp. 38–53, 1994.



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