ISSN 2395-695X (Print)
ISSN 2395-695X (Online)
International Journal of Advanced Research in Biology Engineering Science and Technology (IJARBEST)
Vol. 2, Issue 2, February 2016

DETECTION OF DROWSINESS OR DRUNK DRIVE WITH ADVANCE DRIVER ASSISTANCE SYSTEM FOR CAR PARKING

Mallika.D[1], Ranjitha.R[1] , Rajasekaran.U[2]
UG Students Dept of ECE[1], Asst.Professor Dept of ECE[2]
mallikadece@gmail.com[1] ranjitharknp@gmail.com[1] rajsekar.nlp@gmail.com[2]

ABSTRACT

Accident owing to drowsy is prevented and controlled once the vehicle is out of control. And also the drunk drive conjointly prevented by putting in alcohol detector within the vehicle. The term used here for the recognition that the driver is drowsy is by using eye blink of the driver. In recent times sleepiness is one in every of the most important causes of road accidents. These kinds of accidents occurred owing to drowsy and the driver can't ready to control the vehicle, once he/she wakes. At such times if the automobile, which will perform parallel parking by itself would save the time of the person driving the automobile, significantly to people who are drunk or sleepiness with parallel parking. It embraces cars which can parallel park automatically in an exceedingly very reliable manner would probably decrease the number of accidents related to parking. The goal of our work is to hold out driver assistance model for parking. In our model we propose a method to the driver help system for parking which may be autonomous.

Keywords: automobile security, MQ303A, L3G4200D, Eye Blink sensor.

INTRODUCTION

Governments have tried to stop alcohol-impaired driving primarily through a system of laws, social control, and sanctions. However, these laws are oftentimes desecrated. Vehicle-based alcohol detection systems stop someone with a positive blood alcohol concentration from beginning or operating a vehicle. Within the united states, alcohol detection systems are used almost completely on vehicles of guilty driving-while-intoxicated offenders as a condition of probation or driver license reinstatement. Current breath alcohol ignition interlock devices use either fuel cell or solid-state sensors. The bulk use the well-established electric cell technology utilized in several evidential breath test devices [1]. To forestall drowsy driving, a system of a tiny, low camera set before of the motive force that detects once the driver's eyelids become serious and begin to droop is commercially out there [2]. The most obstacle is that safety measures regarding drunk and drowsy driving disagree, and this place a big inconvenience to automobile users. Specifically, one precaution to forestall drunk driving needs the motive force to actively offer a breath sample through a mouthpiece. An extra issue that has to be addressed if alcohol ignition interlocks are to be used a lot of wide is that the interference of dodging (e.g. Providing a sample from a man-made supply, or drinking, whereas driving once beginning the vehicle). This intelligent parallel parking facility has sensible application once visibility behind the vehicle has reduced owing to mechanics structure .At a similar time, the counseled technique provides interference for the automobile from striking at the rear and afterward reduces the error caused by man .Anyhow, it should be all over that there are still some gaps and also the new directions like the regulation of brake, sensors potency, diagonal parking and system disturbances and surroundings considerations for the additional analysis .The automatic parking maneuver for little mobile vehicle is represented using some analytical techniques. Generally, automatic parking will be classified as 3 sections that are sensory perception, path designing of the path, and maneuver execution. This paper aims to develop the intelligent autonomous parking movement of a tiny low vehicle in motion using some analytical techniques, logic gate style of the model of the mobile vehicle. Earlier, a tiny low mobile vehicle has used within the next step ultrasonic device is utilized to induce through the surroundings detection and processing using microcontroller. Finally, parking maneuver and coding algorithmic rule were developed for booming parallel parking

Currently, there are cars that already equipped with parking assist system (PAS) which can be semi or totally autonomous like in Ford Focus, Toyota Prius and Mercedes A45-AMG. Most of the out there intelligent parallel parking system in a very automobile includes a group of sensors, visual image captured by the camera and controller and additionally DSP to search out the surroundings and

ISSN 2395-695X (Print)
ISSN 2395-695X (Online)
International Journal of Advanced Research in Biology Engineering Science and Technology (IJARBEST)
Vol. 2, Issue 2, February 2016

act consequently to complete the parking oppose the issue. Servo managementler that could be a radio control is that the steering the front tires. Its input and output is PWM (pulse dimension modulation) wave. A default speed regulator is applied for dominant direction and speed. Sensors are used to observe the accessible parking lot, so the system can decide whether or not or not the automobile parking space is enough. Later the parking issue is dispensed.

LITERATURE REVIEW

Driver sleepiness leading to reduced vehicle management is one in every of the most important causes of road accidents. Driving performance deteriorates with raised sleepiness with ensuing crashes constituting 20%-23% of all vehicle accidents. The National road Traffic Safety Administration (NHTSA) guardedly estimates that 100 000 reported crashes are caused by drowsy drivers every year within the U.S. alone. These crashes end in more than 1500 fatalities, 71 000 injuries, And associate degree calculable $12.5 billion in diminished productivity and property loss several efforts are created recently to develop on-board detection of driver sleepiness. A variety of approaches are investigated and applied to characterize driver sleepiness exploitation physiological

a. Related Works On Vehicle Dominant

A driver, state of sleepiness may also be characterized by the ensuing vehicle behavior like the later a grip, handwheel movements, and time-to-line crossings whom correspondence ought to be addressed unintrusive, they're subject to many limitations associated with the vehicle sort, driver expertise, and geometric characteristics and condition of the road. Among these varied prospects, the observation of a driver's eye state by a camera is taken into account to be the foremost promising application owing to its accuracy and Non aggressiveness. The driver's symptoms will be monitored to work out the driver sleepiness early enough to require preventive actions to avoid associate degree accident. Though several studies have developed image-based driver alertness recognition systems exploitation laptop vision techniques, several issues still stay. First, eye detection remains a difficult drawback with no cheap or industrial solutions. For a few applications, eye feature detection will be satisfactory, however, these solely used frontal face images taken with controlled lighting conditions. In a car, the perpetually dynamic lighting conditions cause dark shadows and illumination changes, such effective techniques in stable lighting typically do not work in this difficult surroundings. The performance of current algorithms degrades considerably once tested across completely different postures and illumination conditions, as documented in a very variety of evaluations. A second drawback is that current systems don't use the identification and correlation analysis of assorted visual measures. Typical visual characteristics of a driver with a reduced alertness level embody longer blink period, slow protective folds movement.

b. Eye Blink Detection

This project involves live and controls the attention blink exploitation IR device. The IR transmitter is employed to transmit the infrared rays in our eye. The IR receiver is employed to receive the mirrored infrared rays of the eye. If the attention is closed means that the output of IR receiver is high otherwise the IR receiver output is low. This to understand the attention is closing or gap position. This output is provided to logic circuit to point the alarm. This project helps in dominant accidents owing to cognitive state through eye blink. Here one eye blink sensor is fastened in vehicle wherever if driver looses consciousness, then it's indicated through an alarm.

c. Drowsiness Options

The sleepiness options are characterized by the blinking frequency of the attention by the motive force.

*Awake-conscious-normal
*Drowsy-less conscious-risky
*sleep-out of consciousness-at extreme risk

IMPLEMENTATION

Recently there has been a huge increase in road accidents owing to sleep deprivation ensuing to driver fatigue. The motive force loses management of the vehicle once he falls asleep that results in loss of the many lives.

This is due to the actual fact that the motive force isn't ready to manage his vehicle once he's asleep and by the time they realizes it, there's associated degree accident. The vehicle is at a really high speed on highways owing to that handling is hard and obtaining the vehicle to halt in such a condition is troublesome. Owing to this several automobile firms are attempting to analysis onto however, an associate degree accident that happens owing to driver fatigue will be prevented. During this

ISSN 2395-695X (Print)
ISSN 2395-695X (Online)
International Journal of Advanced Research in Biology Engineering Science and Technology (IJARBEST)
Vol. 2, Issue 2, February 2016

project we are going to generate a model which may stop such an incident. The aim of such a model is to advance a system to notice fatigue symptoms in drivers and management the speed of the car to avoid accidents. The most elements of the system consist of an eye fixed blink device for driver blink acquisition associate degree an adaptive speed controller designed exploitation stepper motor for providing precise positioning of the accelerator to manage the speed of the car. The figure 1 shows the block diagram of the system as follows.

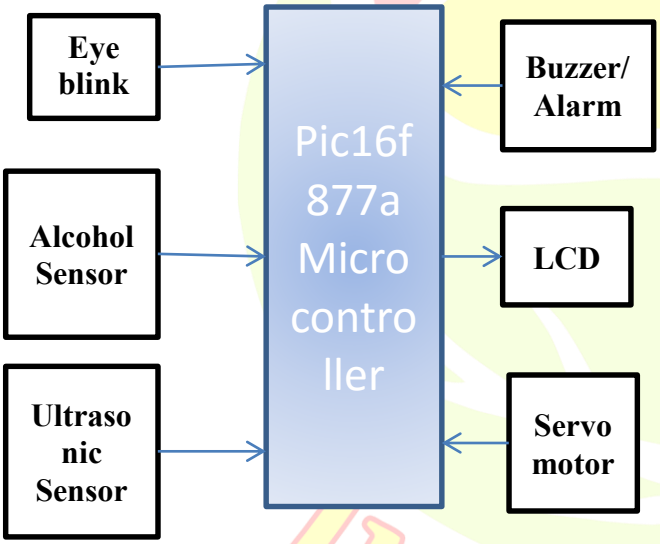

Figure 1 Block Diagram of the system

The hardware components used in this project are

- PIC Microcontroller
- Eye Blink Sensor
- Alcohol Sensor
- LCD Indicators
- Relay
- Power Supply (Battery)
- Ultrasonic sensor

The PIC16f877a controls the eye blink sensor in order to detect the driver alertness and alarms the driver when in drowsiness. The eye blink sensor consists of the IR transmitter and receiver. When the driver has consumed too much alcohol and not able to control his car the automatic driver assistance system will park their car my measuring the obstacle detected using the ultrasonic sensor. The automatic car parking done by using the ultrasonic sensor with servo motors based on obstacle sensed.

RESULT AND DISCUSSION

The drowsiness level detection through the eye and processing the image from the spectacle with actual level using image processing. The consumption of alcohol by the driver is identified & alerted through buzzer and LCD. The automatic parking controls of vehicle corresponding to the level of drowsiness detected.

a) Obstacle avoidance

Whereas drive down the hallway/road towards its goal, the automobile would possibly encounter obstacles. We are able to contemplate two methods; anticipate to the obstacle to maneuver or go around it. If the world is imagined to be static, the second alternative is that the sole alternative. Throughout a globe application, the car would go around or wait, counting on the obstacle encountered, size, space and if it seems to be static or not. We have a tendency to assume the world to be static, that the mechanism will try to go around the obstacle. The matter is also divided into three sub problems:

1. Obstacle detection
2. Going around the obstacle
3. Getting back on the path towards the goal

b) Detection of parking spot

In order to search out the parking spot we have a tendency to use GPS for location pursuit, supported latitude and lines of longitude of the automobile parking space. The google api supported with GPS shows the situation of the vehicle to auto parking in the provided space.

c) Curve follows

Once the boundary points of the car parking zone are determined and also the golem has stopped at a desired location, the sole issue left to try is to perform the parallel parking procedure. In our experiments we've tried many completely different strategies. 1st we have a tendency to developed associate degree empirical methodology during which the setting of the different velocities determined through an experiment. We have a tendency to additionally try to approximate a sinusoid by following the arcs of 2 accessible circles. To create our parallel parking a lot of reliable and general we have a tendency to determine to implement curve following. Our goal performs parallel parking by following a sinusoid.

The figure 2 shows the eye blink detection and the figure 3 shows the alcohol detected as follows.

ISSN 2395-695X (Print)
ISSN 2395-695X (Online)
International Journal of Advanced Research in Biology Engineering Science and Technology (IJARBEST)
Vol. 2, Issue 2, February 2016

Figure 2 Eye blink detection

Figure 3 Alcohol detection

The figure 4 shows the automatic parking system

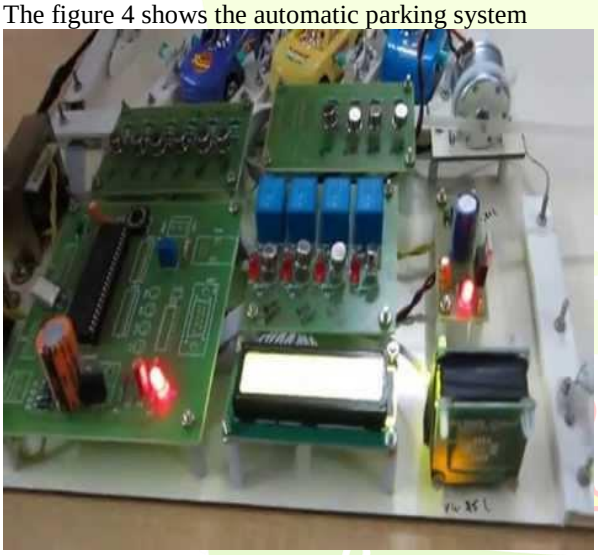

Figure 4 Automatic Car Parking system

CONCLUSION

This is because of the fact that the driver is not able to control his vehicle when he is asleep and by the time he realizes it, there is an accident. The vehicle is at a very high speed on highways due to which handling is tough and getting the vehicle to halt in such a condition is difficult. Due to this many automobile companies are trying to research into how an accident which occurs due to driver fatigue can be prevented. In this project we will generate a model which can prevent such an incident. The Purpose of such a model is to advance a system to detect fatigue symptoms in drivers and control the speed of vehicle to avoid accidents. The main components of the system consist of an eye blink sensor for driver blink acquisition and an adaptive speed controller designed using stepper motor for providing precise positioning of the throttle valve to control the speed of
the vehicle. Advanced technology offers some hope avoid these up to some extent. This project involves measure and controls through alcohol sensor and eye blink using IR sensor. A novel automated parking system is implemented based on localization and obstacle detection using LABVIEW and Arduino controller. The parking is efficient when the car successfully enters the parking space, the rear and front sensor will detect the distance from the vehicle to the obstacles respectively. Then, the vehicle position is adjusted by the difference between the two distances is zero, which means that the car is centered in the parking space. Generally, during the parking maneuver, speed control is done in such a way that the vehicle accelerates to a desired speed and then remains at this speed for executing some part of the maneuver before it finally decelerate and stop when the vehicle has reached the desired position in the parking space.

Future Scope of our Paper

We are planning to implement different types of sensors to increase the Safety and Security in Automobiles and it will be cost effective also. One of our next future concept is "Driver Drowsiness Detection System" which will be very much useful for the drivers, especially who are travelling long distances and another future concept is "Heart rate & BP Detection System" which will be an important safety system for diabetics or BP patients to get help in an emergency situation from the co passenger. It will be a lifesaving system in the future.

Reference

[1]. Brown I. Driver fatigue. Human Factors, 1994, 36(2):298-314.
[2]. Dinges D, Mallis M, Maislin G, et al. Final report: Evaluation of techniques for ocular measurement as an index of fatigue and the basis for alertness management. NHTSA,Washington DC, Tech. Rep. DOT HS 808762, 1998.
[3]. Lal S K, Craig A. Reproducibility of the spectral componentsof the electroencephalogram during driver fatigue.Int. J. Psychophysiology., 2005, 55(2): 137-143.
[4]. Lal S K, Craig A. Driver fatigue: Electroencephalography and psychological

assessment. Psychophysiology, 2002, 39(3): 313-321.
[5]. Hayashi K, Ishihara K, Hashimoto H, et al. Individualized Drowsiness detection during driving by pulse wave analysis With neural network. In: Proceedings of the 8th InternationalIEEE Conference on Intelligent Transportation Systems. Vienna, Austria, 2005: 901-906.
[6]. Yang G, Lin Y, Bhattacharya P. Driver fatigue recognition Model based on information fusion and dynamic bayesianNetwork. Information Sciences，2010, 180(10): 1942-1954
[7]. Ji Q, Zhu Z, Lan P. Real-time nonintrusive monitors a prediction of driver fatigue. IEEE Transactions on Vehicular Technology, 2004, 53(4): 1052-1068.
[8]. Lenne M, Triggs T, Redman J. Time of day variations in driving performance. Accident Analysis & Prevention, 1997, 29(4): 431-437.
[9]. Thiffault P, Bergeron J. Fatigue and individual differences in monotonous simulated driving. Personality and Individual Differences, 2003, 34(1): 159-176.
[10]. Stephen H. Impairment of driving performance caused by sleep deprivation or alcohol. A comparative study. Human Factors, 1999, 41(1): 118-128.
[11] Al – Absi, H.R.H., Devaraj, J.D.D., Sebastian P. and Voon V. P. 2010. Vision-BasedAutomated Parking System. Information Sciences Signal Processing and Their Applications, pp.757-758.
[12] Fairus M. A., Salim S. N., Jamaludin I. W. and Kamarudin M. N. 2011. Development of an Automatic Parallel Parking System for Non holonomic Mobile Robot. International Conference on Electrical Control and Computer Engineering (INECCE), pp.45 – 49.
[13] Gupta A., Divekar R. and Agrawal M. 2010. Autonomous Parallel Parking System for Ackermann Steering Four Wheelers. Computational Intelligence and Computing Research, 1-2.
[14] Hélène V., Sébastien G., Nicoleta M.E. and Saïd M. 2015. Automatic Parallel Parking in Tiny Spots: Path Planning and Control. IEEE Transactions on Intelligent Transportation Systems, Vol. 16, No. 1, February, 2015.

BIBLOGRAPHY

Mallika.D currently pursuing Bachelor of Engineering in Electronics and Communication Engineering at SCAD Institute of Technology. Her area of interest is Microprocessor and Microcontroller,Digital Electronics. mallikadece@gmail.com

Ranjitha.R currently pursuing Bachelor of Engineering in Electronics and Communication Engineering at SCAD Institute of Technology. Her area of interest is Digital Electronics, Digital Image Processing. ranjitharknp@gmail.com

Rajasekaran.U, Assistant Professor in the Department of ECE in SCAD Institute of Technology, Coimbatore, was born on 13-01-1985. He was graduated at Anna University in B.E., Electronics and Communication Engineering in 2007. He has done M.E. VLSI Design in 2014 at Anna University, Chennai. He worked as a lecturer in Nanjiah Lingammal Polytechnic College and Nachimuthu Polytechnic College. He has great interest in VLSI Design, Communication Engineering and Low power VLSI Design. rajsekar.nlp@gmail.com