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Automatic Alcohol Detector Car Control Panel

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Abstract: ***The idea is about making vehicles more selfregulating and automatic which may inform or combat vehicle drivers under terrible conditions .The system consist of MQ-3 alcohol sensor to continuously observe the alcohol blood concentration level, to discover the presence of liquor in the breath of a vehicle's driver. By placing sensor on steering wheel of the vehicle, the system has the capacity to continuously check alcohol concentration level from the driver's breath. In case if driver is drunk while driving then the CCW system would get activated. Using CCW the car could change its own position and maintain its own speed depending on other nearby vehicles. This would decrease the extent of accident.***

Index Terms: Internet of Things, Accident prevention, Alcohol detection

I. INTRODUCTION

As the technology is progressing in all the aspects of life, saving a life remains the biggest area to be worked upon. Humans have not found a good solution for lives lost during transportation. Some car companies have tried to implement some technologies, but unfortunately not in an effective way as it is described ahead. This is the inspiring idea behind the project. In most of the technologies used today for accident prevention, there is no tactical trigger to activate a device that will prevent accidents. They either are continuously active throughout or they fail to function properly. As it will be discussed further, being in use all the time also has some disadvantages sometimes. The CCW has 3 parts and has three functions respectively. Forward collision warning assistant warns the driver, if the driver does not takes further action then the forward collision assistant gets activated. They might also be integrated with the braking system to apply automated intelligent braking. Lane change assistant alerts vehicle's driver ,if there are obstructions in the unseen area of lanes or vehicles approaching swiftly from behind. The higher versions do the lane changing themselves automatically. Intersection assistant sees intersect traffic in a road junction. If it discovers a hazardous situation, it informs vehicle's driver and initiates automatic instant brakes by operating alarms and instinctively involving brakes.

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Now, if CCW is activated for the entire time, it may have some unwanted discourse like taking decisions when the driver is capable to or taking decisions which the driver had other alternatives to. Therefore, as cue to start this system, the biggest factor of accident chosen i.e. intoxication. As a result, when the indicating device detects unhealthy levels of alcohol consumption, it automatically switches the CCW on. This provides 360 degree awareness within a short time span by executing better architecture system.. This includes an evaluator in each single vehicle evaluating its own position in GPS correlation in spite of GPS deterioration (e.g., extended canopies of trees), involving fusion of onboard state sensors such as wheel speed ,yaw rate speed and direction.

Wireless communication system in each individual vehicle is suppose to transmit the data to the near by vehicles repeatedly maintaining estimation of the motions of all its neighboring vehicles.

II. OBJECTIVES

1)Making cars more intelligent and interactive which may notify or resist user under unacceptable conditions .2)In this system we are detecting the existence of liquor in the exhalation of a driver continuously from the driver's breadth. 3)In case if the driver is drunk while driving then the Cumulative Collision system would get activated. 4)Using Cumulative Collision system the car could change its own position and maintain its own speed depending on other near by vehicles. This would decrease the extent of accident.

III. LITERATURE REVIEW

[1] James A. Misener (2005) talks about cooperative collision warning which includes forward collision warning assistant, and intersection assistant along with a blind spot Assistant where he uses 360 degree situational awareness. The main drawback here is that he does not use digital map There by increasing the chance of false alarms.

[2] S.P. Bhumkar and V.V. Deotare, R.V.Babar use the concept of alcohol detection and eye blink sensor to monitor the motorist. The algorithm used here is fatigue detection algorithm using eye blink, alcohol, gas sensor .The main drawback here is it may give false alarms and might not function in absence of light.

[3] Ardalan Vahidi and Azim Eskandarian uses the concept of Adaptive cruise control (ACC), collision avoidance, collision warning which includes Automation /warning system. Here the main drawback is that it needs further reinforcement by research.

[4] Sagar D. Charde, Prof. N. P. Bobade, Dr. D. R. Dandekar uses the concept of IOT based hardware & android platform based system design. The algorithm uses driver's drowsy detector, collision warning system & impact sensor. Here the drawback is it's not a selfsustainable device.

[5] Dibakar Barua, Pranshu Jain, Jitesh Gupta, Dhananjay V. Gadre uses the concept monitors the driver's state using multiple sensors and looks for triggers that can cause accidents, such as alcohol in the driver's breath and driver fatigue or distraction. Here he uses Alcohol, eye blink, head tilt detector. Here the drawback is that there is always the issue of adjustment of the calibration potentiometer in the I.R Sensor to ensure the ambient light does not interfere with the sensing process.

IV. INTEGRATED SYSTEM

The integrated system works in coordination with each other.

MQ3 Gas Sensor supplies an analog impervious turn out depending on alcohol consolidations. It detects the existence of alcohol gases at consolidations from 0.07 mg/L to 11 mg/L. Its potential is lesser in fine air & boosts as the consolidations of alcohol gases rises, providing both digital and analog turn outs.

Fig. 1. MQ3 sensor

Computer and communication system are on board condition sensors taken into a devise system, upon which there is a PC/104 heap, where the input is taken in a host of supplementary apparatus: fiber optic spinner rate, 803.10b radio, Global positioning system, and inside the vehicles CCW showboat apparatus and laptop central processor.

With wireless transmission structure the Motor transmits frequently at 55 m/sec over a period of time and over certain extension up to a kilometer with relative speeds up to 111.045 kmph. The vehicles transmit data such as GPS position, speed rate, and directions

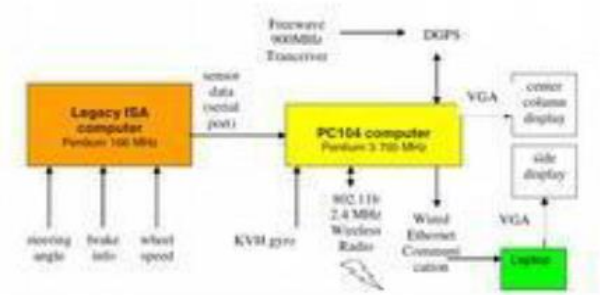

Fig. 2. Computer and communication system

Situation Awareness Assistants are Forward Collision Assistant, Intersection Collision Assistant and Lane Change Assistant.

Fig. 3. Forward Collision Assistant

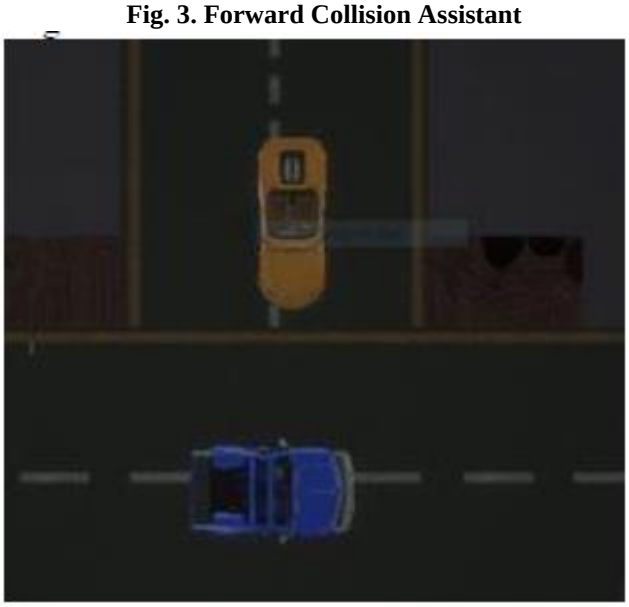

Fig. 4. Intersection Collision Assistant

Fig. 5. Lane change assistant

In the above figure MQ3 sensor is fitted on the steering wheel of the vehicle which would continuously monitor the alcohol concentration in the driver's breath .

If the alcohol concentration is more than the threshold values then the Cumulative Collision Warning (CCW) would get activated. The CCW includes the forward collision warning, lane change warning, intersection warning. This would decrease the extend of accident.

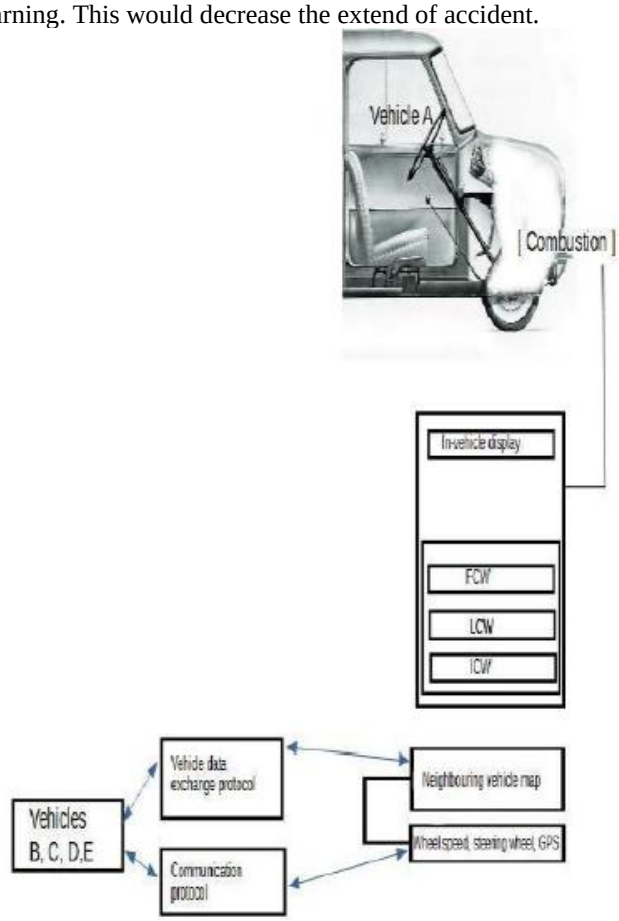

Fig. 6. Integrated system

V. PERFORMANCE ANALYSIS

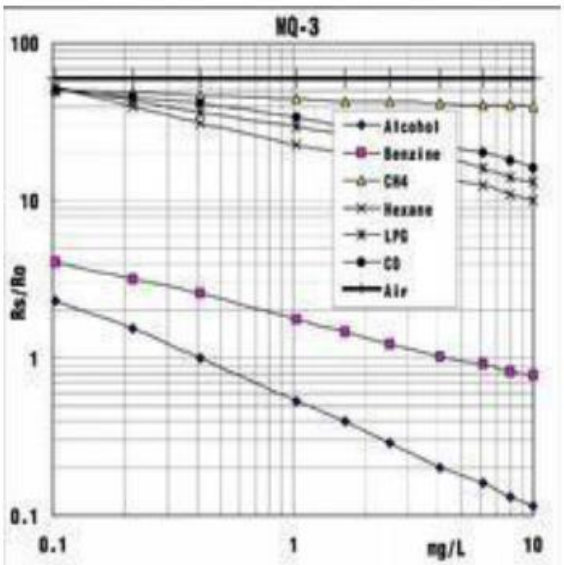

Fig. 7. Lane change assistant vehicle warning

Fig. 8. Graph between Time to collision and relative velocity

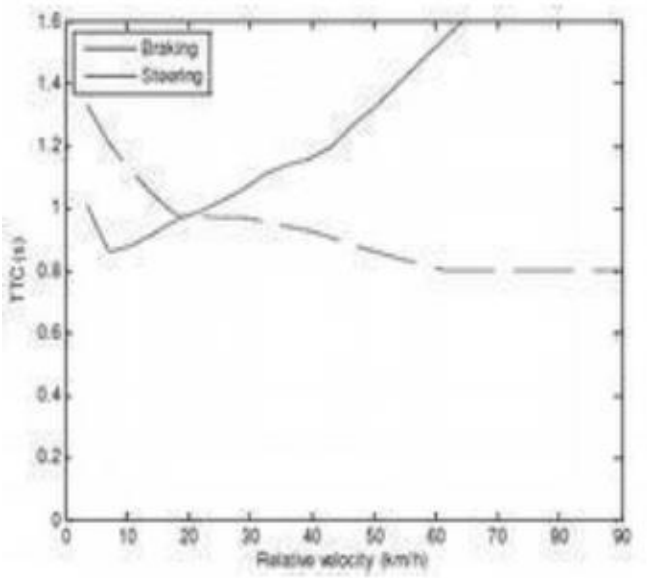

Fig. 9. Graph between velocity reductions to relative velocity

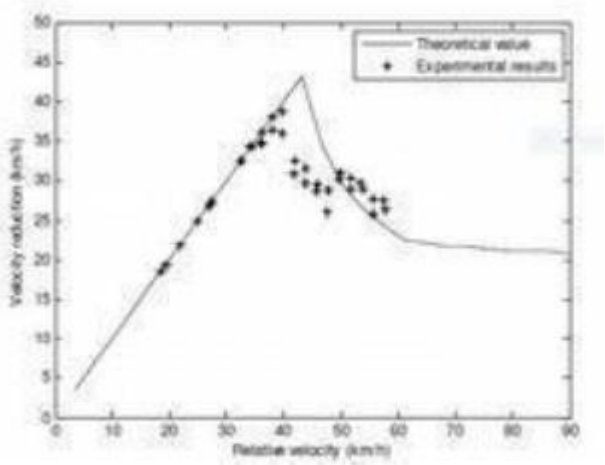

Fig. 10 MQ3 sensor working conditions

VI. CONCLUSION

This system efficiently detects the state of the intoxicated driving. By executing the proposed system in vehicles, a secure drive can be achieved and accident rate can be reduced due to intoxicated driving. The system has Cumulative Collision Warning system, this would automatically get activated if the driver is found to be drunk.

This can be described as a safety features for vehicle. Using CCW the car could estimate its own position and maintain its own speed. This would decrease the extent of accident.

FUTURE ENHANCEMENTS

It seems like even after installing CCW (cooperative collision warning) into the system using which the car could change its own position and maintain its own speed depending on other nearby vehicle we can't prevent accident completely .So, in order to reduce the extent of accident we can use roller fencing on roadside ,this reroutes vehicle which are prone to accident to the authentic direction by successfully consuming smashing energy during collision with rollers, higher and lower rails (the smashing-energy is transformed into rotational energy).

Advantages:

• Easy fixation and maintenance.
• The roller is highly elastic which is less likely to get damaged by the impact of collision
• Powder layered rails of various colours can be obtained upon request.
• Reduces destruction on driver and vehicles with rollers and dual guardrails

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