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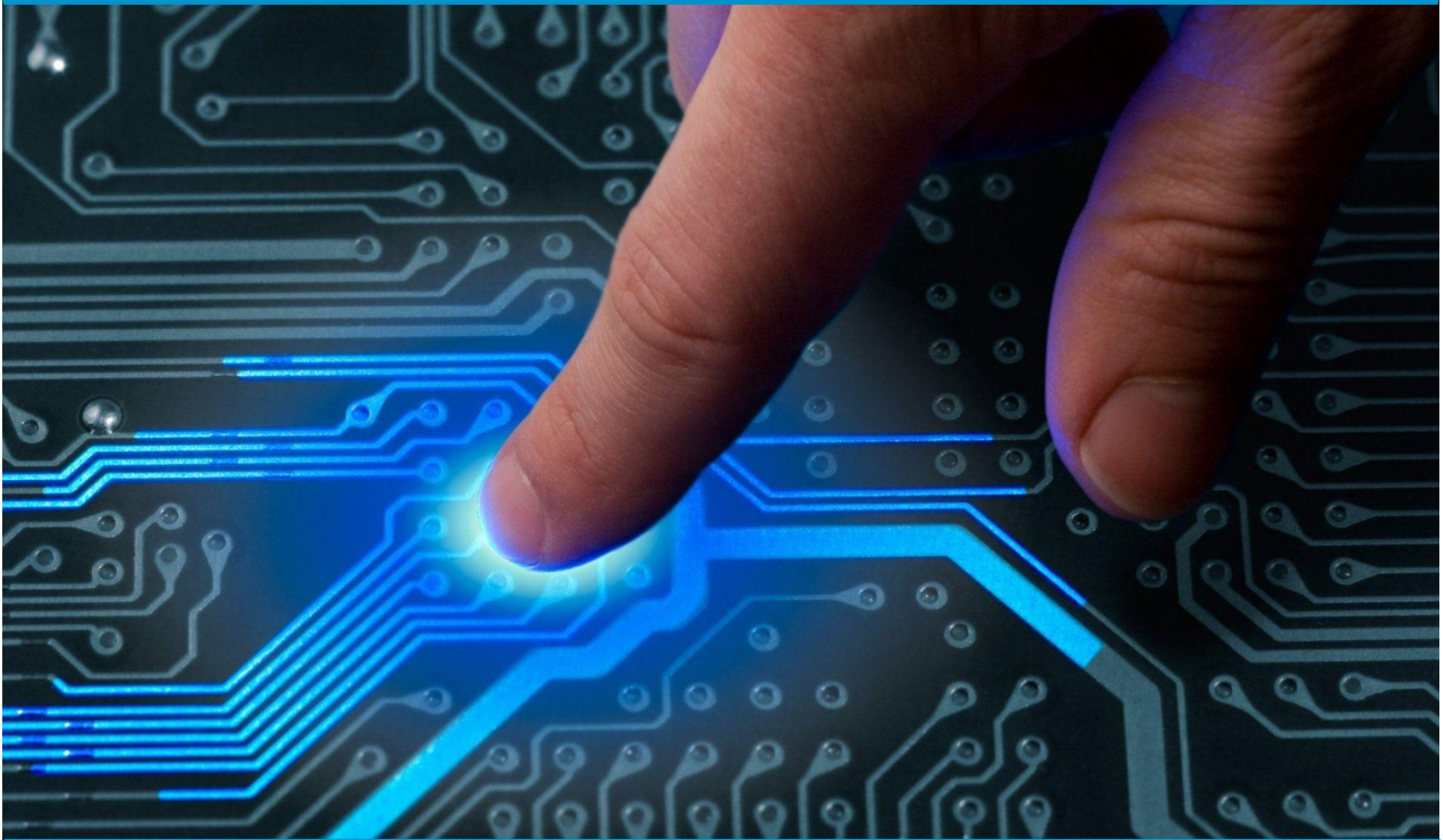

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Vehicle Automation Using IOT

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ABSTRACT: Accident occur as public do not follow the traffic rules, like not maintaining a proper braking distance between two vehicles, they also fail to follow the traffic signals when it is 'RED', also due to the fast life everyone is in a hurry of reaching the destination in time. In this paper, propose system implementing an IOT based Vehicle Tracking, Accident Detection, Accident Avoidance, Drunk Driver Detection and Fire Detection System. This system using Vibration sensor, Ultrasonic sensor, Alcohol Sensor, Smoke Sensor, Web camera, GPS, Arduino Microcontroller, Android App. Our application focus on to providing them more convenience with vehicle safety. It provides Real-time vehicle location information also integrated Google Maps in the application.

KEYWORDS: IOT, Vehicle Tracking, Vehicle Accident Detection, Vehicle Accident Avoidance, Vehicle Drunk Driver Detection, Fire Detection, GPS, Arduino, Ultrasonic Sensor, Vibration Sensor, Alcohol Sensor, Cloud Server, Android App

I. INTRODUCTION

About 1.24 million people die each year as a result of road traffic crashes, drivers being drunk, traffic signal, etc. Decade of Action for Road Safety (20112020) with the aim of saving millions of lives by improving the safety of roads, vehicles, accident detection, accident avoidance, and drunk driver detection. In this paper, propose system implementing an IOT based Vehicle Tracking, Accident Detection, Accident Avoidance, Drunk Driver Detection and Fire Detection System. This system using Vibration sensor, Ultrasonic sensor, Alcohol Sensor, Smoke Sensor, GPS, Arduino Microcontroller, Android App. Our application focus on to providing them more convenience with vehicle safety. It provides Real-time vehicle location information also integrated Google Maps in the application.

II. RELATED WORK

In this paper, we present a powerful tool named Signal Voronoi Diagram (SVD) to partition the radiofrequency (RF) signal space of WiFi Access Points (APs), distributed where a bus travels, into Signal Cells, and then into fine-grained Signal Tiles, tackling the problem of noisy received signal strength (RSS) readings and possible AP dynamics. On top of SVD, we present a novel framework so-called WiLocator, to track an urban bus based on the surrounding WiFi information collected by the commodity off-the-shelf (COTS) smartphones of bus riders and the mobility constraint of a bus. To predict the bus arrival time, we incorporate the computed location information and the temporal consistency of travel time of buses on the overlapped road segments. [1]

In this paper, we propose a novel framework for automatic detection of road accidents in surveillance videos. The proposed framework automatically learns feature representation from the spatiotemporal volumes of raw pixel intensity instead of traditional hand-crafted features. We consider the accident of the vehicles as an unusual incident. The proposed framework extracts deep representation using de-noising auto encoders trained over the normal traffic videos. The possibility of an accident is determined based on the reconstruction error and the likelihood of the deep representation. For the likelihood of the deep representation, an unsupervised model is trained using one class support vector machine. Also, the intersection points of the vehicles trajectories are used to reduce the false alarm rate and increase the reliability of the overall system. We evaluated out proposed approach on real accident videos collected from the CCTV surveillance network of Hyderabad City in India. The experiments on these real accident videos demonstrate the efficacy of the proposed approach. [2]

In this paper, we particularly analyze the problem of collision avoidance in scenarios in which high-speed vehicles need to generate evasive maneuvers within very short time intervals to avoid or at least mitigate a hypothetical (multiple) collision. We pose this as a multi-objective optimization problem and simplify it by considering only lateral motion for the optimization process, thus having to solve a 1-D trajectory generation problem. The routes of vehicles are optimized according to a weighted aggregation functional that: 1) maximizes the lateral distances between vehicle and vehicle obstacle pairs at the time of overcoming the obstacles; 2) minimizes the lateral speeds at the end of the path; and 3) minimizes the instantaneous lateral acceleration (inertia) along the maneuver. In addition, we compute trajectories by following an optimization strategy that divides the problem into a set of independent sub problems, which are optimized in parallel by using a gradient-descent-based methodology. [3]

We have developed a system for this that involves the water-cluster-detecting (WDC) breath sensor. The WCD breath sensor detects breath by measuring electric currents of positively or negatively charged water clusters in breath that is separated by using an electric field. The WCD breath-alcohol sensor couples the WCD breath sensor with an alcohol sensor and simultaneously detects the electrical signals of both breath and alcohol in the breath. This ensures that the sample is from a person's breath, not an artificial source. Furthermore, the WCD breath sensor can detect breath from about 50 cm and can also test the level of alertness of a subject sitting in the driver's seat of a car. This is done by measuring the point of time at which the breathing changes from conscious, such as in pursed-lip breathing, to unconscious, such as when the driver becomes drowsy. This is the first result that one device has been used to detect both drunk and drowsy driving. [4]

This paper presents an overview of research on ICT-based support and assistance services for the safety of future connected vehicles. A general classification and a brief description of the focus areas for research and development in this direction are given under the titles of vehicle detection, road detection, lane detection, pedestrian detection, drowsiness detection, and collision avoidance. Following an overview and taxonomy of the reviewed research articles, a categorized literature survey of safety critical applications is presented in detail. Future research directions are also highlighted. [5]

III. PROBLEM STATEMENT

This implementation is aimed at a real time usage of Vehicle Tracking, Accident Detection, Accident Avoidance, Drunk Driver Detection and Fire Detection System using IOT.

IV. PROPOSE SYSTEM

In this project, propose implementing a IOT based Vehicle Tracking, Accident Detection, Accident Avoidance & Drunk Driver Detection System. Design vehicle location system, which will track the location of the vehicle using GPS. Design vehicle accident detection system, which will detect the accident of the vehicle using vibration sensor and capture the vehicle accident image. Design vehicle avoidance system, which will avoid the vehicle accident using ultrasonic sensor. Design vehicle drunk driver detection system, which will detect the drunk driver using alcohol sensor.

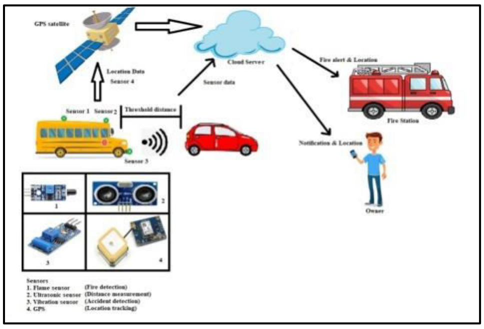


Fig: System Architecture

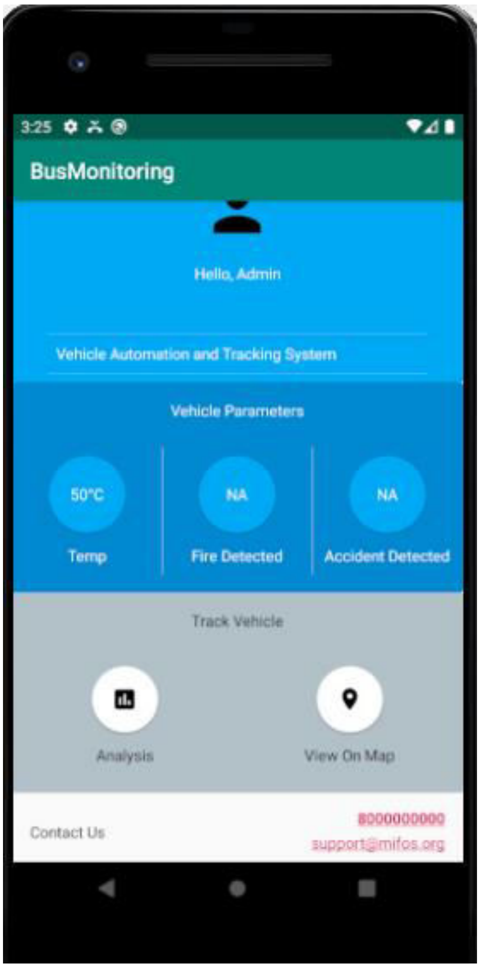
V. MATHEMATICAL MODEL

- S = {I, P, O}
  S = System
  I = Input
  P = Process
  O = Output
- I = {I0, I1, I2, I3, I4}
  I0 = Tracking details
  I1 = Vibration details
  I2 = Distance & Speed details

I3 = Alcohol value
I4 = Smoke value

- P = {P0, P1, P2, P3, P4}
  P0 = Vehicle tracking
  P1 = Vehicle detection
  P2 = Vehicle avoidance
  P3 = Drunk driver detection
  P4 = Fire detection
- O= {O0, O1, O2, O3, O4}
  O0 = Locates vehicle
  O1 = Detect accident with captured images
  O2 = Avoid vehicle accident
  O3 = Detect drunk driver
  O4 = Detect fire

VI. RESULT



VII. ADVANTAGES

- It detects the vehicle location and send information to the server and user.
- It detects the accident and send information to the server and alert message to the user.
- Using ultrasonic sensor for avoiding vehicle accident.
- It detect the vehicle drunk driverdetection and send information to the server.

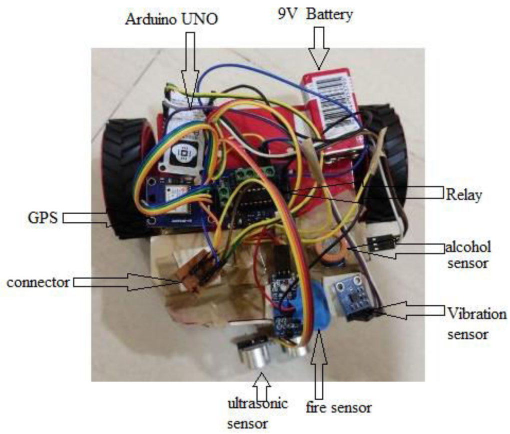


Fig. Module

VIII. APPLICATIONS

- Ola Uber public transport safe and secure
- School transport service
- Avoiding accident
- Information regarding vehicle drive
- Location to transport owner
- Safe and secure transfer
- School transport service

IX. CONCLUSION

This paper is made with pre-planning, that it provides flexibility in operation. This innovation has made more desirable and economical. This paper is implementing an "Vehicle Tracking, Vehicle Accident Detection, Vehicle Accident Avoidance, Vehicle Drunk Driver Detection and Fire Detection System using IOT" is designed with the hope that it is very much economical and helpful for driver and as well as conductors and passengers during journey.

REFERENCES

[1] Rui Zhang, Wenping Liu, Yufu Jia, Guoyin Jiang, Jing Xing, Hongbo Jiang, Jiangchuan Liu, "WiFi Sensing Based Real-time Bus Tracking and Arrival Time Prediction in Urban Environments", IEEE Sensors Journal, 2018.

[2] Dinesh Singh and Chalavadi Krishna Mohan, "Deep Spatio-Temporal Representation for Detection of Road Accidents Using Stacked Autoencoder", IEEE Transactions On Intelligent Transportation Systems, 2018.

[3] Juan-Bautista Tomas-Gabarron, Esteban Egea-Lopez, and Joan Garcia-Haro, "Vehicular Trajectory Optimization for Cooperative Collision Avoidance at High Speeds", IEEE Transactions On Intelligent Transportation Systems, Vol. 14, No. 4, December 2013.

[4] Minoru Sakairi, "Water-Cluster-Detecting Breath Sensor and Applications in Cars for Detecting Drunk or Drowsy Driving", IEEE Sensors Journal, Vol. 12, No. 5, May 2012.

[5] Cem Bila, Fikret Sivrikaya, Manzoor A. Khan, and Sahin Albayrak, "Vehicles of the Future: A Survey of Research on Safety Issues", IEEE Transactions on Intelligent Transportation Systems, 2016.

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