

A Survey on Vehicle Efficiency Monitoring

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ABSTRACTS: *Human beings frequently travel in today's world by taxi to communicate from one place to another without knowing the health status of the driver and co-passengers. In this global coronavirus pandemic, it has become very important for everyone to be safe because we know that with the growing situation, neither corona is the first nor the last of its kind. So, to ensure safety for all human beings. This research paper introduced an application where multiple sensors are installed to detect the temperature along with the motions and gestures of each person sitting inside the car through the implementation of a Health Monitoring System. When the sensor installed in the cars reads something that is not standard, an immediate warning will be shown on the main screen and after that an alarm will be alerted to the driver about the irregular condition of the passenger. The driver will assist the passenger and ensure safety in the vehicles for the next coming passenger by means of a creative step in the text. In the coming time, this application will be very helpful and this application will be further improved again and again by adding more sensors and computers.*

Keywords: *Smart vehicles, health detection system, sanitizing mechanism, Efficiency, Motor, Human Being.*

INTRODUCTION

In the 1960s, the spread of coronavirus in the current year was first reported. In Wuhan, China, this coronavirus emerged. In the spectrum of species, from camels to pets, a separate stream of coronavirus was identified. This virus was declared a global emergency by the World Health Organization on the 30th of January 2022. The problem is not what's going on in China, but the key problem is that the virus is growing increasingly across the world [1]. And the number of different countries getting infected continues to rise.

Technology and innovation in the field of automated industries are continuously increasing. By turning the mechanical job into an automated process. Infrastructure and natural resources are unable to keep up with increasing requirements. You need to be smarter, think more about things, build smart infrastructure, technology and applications, so we will link resources in structures, architecture and industries to adapt and develop the way you live and function to enhance the universe and human beings [2]. By creating the surroundings which can care. For a number of years everybody is talking about the smart city but it is a topic which may get a fresh empties from the Covid-19 pandemic by giving the need for more intelligent infrastructure and need to be adaptable to deal with this so called new virus.

Many applications have been developed till date but as the world is encountering an especially outrageous stage due to eruptions of Coronavirus disease, this contamination has provoked various difficulties. We have been adhering to the standards of keeping up the social removing as well as singular neatness to keep this disease at edge. At times it gets hard for an individual to monitor the necessary separation he/she needs to keep up to follow the standards of social removal. This creation won't just assist or guide the individual yet additionally mindful them about the approaching individual's internal heat level. Including technology that can carry innovation along with security [3]. A lot of energy is wasted during the production and implementation of technology because individuals who create the technologies vary from the individuals who adopt them, so 80% of the energy is wasted. So these silos between them, the planer, builder or implementer, cause enormous losses of energies. These are changing a bit as one has become aware of the energy wasting and also developing technologies enables us to save energy and resources.

It has been found in the field of transportation that the pandemic is forcing, of course, because of the road and the need to repopulate the road by introducing smarter vehicles. The technology that can be introduced in vehicles to support passengers and the driver control during transportation has been developed in this paper. In order to help passengers and drivers travel safely in this pandemic situation,

this technology includes an infrared temperature sensor to detect the temperature of the passenger as well as the driver and a camera, an ultrasonic sensor and a sanitising spray.

REVIEW OF LITERATURE

Bhavana T. Petkar et. al., in this earlier research article, through using GSM, al. had suggested automatic driver drowsiness warning and health monitoring system. This research paper specifically illustrates the driver's somnolence condition from which numerous problems occur, such as injury, damage and deaths. The author has come up with an application that can verify or classify the driver's condition in order to resolve this situation. This programme contains sensors that are used to recognise the drowsy driver as well as to monitor the driver's health condition. In the car, an alarm is mounted that buzzes with an indication whenever the driver feels drowsy. If the set values of the sensors do not exceed the set threshold value range, then the engine of the vehicle stops working. If the situation is serious, the GPS module receives the signal to navigate the place and the information is transmitted via the GSM module to the person who was allocated for the answer. The 8051 Microcontroller manages all sensor and system operations. The authors concluded with this request that this application would prevent road accidents and injuries [1].

A paper called An Automobile Environment Detection System Based on Deep Neural Network and its Implementation using IOT-Enabled In-Vehicle Air Quality Sensors was launched by Jae Joon Chung and Hyun-Jung Kim. This previous art elucidates the implementation of advanced technology such as deep learning, which is used to track the driver's condition to avoid accidents caused by drowsiness while driving. While driving vehicles for longer period of time driver feel drowsiness, to prevent as a precursor to this parameter. This application plurality of sensors such as sensors which can measure CO, CO₂, and particulate matter (PM), as well as the temperature and humidity and send signals to the assistant. These signals are then transmitted to the server i.e. Internet of Things, and a deep neural network which utilises this collected data and information to verify the quality of air in the vehicle. In order to construct an air quality anomaly detection model, the deep network uses long short-term memory (LSTM), skip-generative adversarial network (GAN), and variation auto-encoder (VAE) models. The deep learning models collect data through LSTM, while through GANs and VAEs, the semi-supervised deep learning models collect data [2]. The objective of this assistant is to provide real-time drivers with vehicle air quality information, such as PM warnings and sleep-deprived driving alerts, and thus prevent accidents.

The author M.Jyothi Kiran and S.Ravi Teja deals with the development of an embedded device in this paper, which helps to detect the vehicle condition by tracking the internal parameters used to determine the current health condition of the vehicle. In providing protection, security, mobility and improving the reliability of travel, the information collected from the traveller plays a vital role. This traveller information can be a continuous data on performance of the vehicle and the status of its internal components. In this project, an in-vehicle embedded system is being developed to generate a vehicle health report (VHR) whenever needed by the user. It also acts as an eco-friendly vehicle by monitoring the emissions from the car which in turn helps in regulating (by taking proper actions to reduce the emissions as per the faults indicated in the VHR) the environmental pollution. It predicts the future errors so that the driver can have an uninterrupted journey and can avoid accidents. Thus, it alerts the driver about future errors and assists him for a safe drive [3]. The data required for generating the health report consists of parameter values (outputs of in-built sensors) of different systems inside the vehicle. This data can be obtained using the OBD-II protocol which is followed by the vehicles manufactured after 1996. It uses LabVIEW as platform that has automotive diagnostic command set tool kit which helps in building up the software required to communicate with the vehicle's ECU through OBD-II system.

K Parmesh et. al. described a modern vehicle comprising a range of ECUs and sensors were proposed by al. to make the vehicle smarter in terms of engine decisions, performance, fuel efficiency, protection and

stability. Valuable data is given by ECUs in the form of diagnostic codes, i.e. the procedure OBDII (on-board diagnostics) helps to define the unique issue in the vehicle system. The collected information is then operated by the service technicians to address the issues occurred. This paper deals with the exploring the potential of OBDII codes from engine ECU and compute the data on an Android device to monitor the vehicle health status in current time situation [4]. The entire idea of this system is to provide portable diagnosis solutions and integration of such system into in-vehicle entertainment like Google's Android Auto and Apple's Car Play which can be one of key component for V2X and IOVs (Internet of Vehicles).

The author Alejandro Tirachini and Oded Cats described the COVID-19 pandemic situation in this pandemic situation, showing how the virus presents a major challenge to contemporary public transport worldwide, resulting from an unprecedented drop in demand and income. In this paper, by early June 2020, the authors synthesise the state-of-the-art on key developments in public transport and the COVID-19 pandemic, including the various responses adopted by governments and public transport agencies around the world, and the research needs related to critical issues that reduce the risk of contagion in public transport in the so-called post-transport era. While attempts at adherence to physical distancing (which challenges the very concept of mass public transportation) are looming in several countries, the latest research shows that for closed environments such as public transportation vehicles, the proper use of face masks has significantly reduced the probability of contagion.

VEHICLE EFFICIENCY MONITORING

The economic and social effects of the COVID-19 outbreak in public transportation extend beyond service performance and health risks to financial viability, social equity, and sustainable mobility. There is a risk that if the public transportation sector is perceived as poorly transitioning to post-pandemic conditions, that viewing public transportation as unhealthy will gain ground and might be sustained. To this end, this paper identifies the research needs and outlines a research agenda for the public health implications of alternative strategies and scenarios, specifically measures to reduce crowding in public transportation. The paper provides an overview and an outlook for transit policy makers, planners, and researchers to map the state-of-affairs and research needs related to the impacts of the pandemic crisis on public transportation [5]. Some research needs require urgent attention given what is ultimately at stake in several countries: restoring the ability of public transportation systems to fulfil their societal role.

This research paper introduces the situation of the transport system whereby we are unaware of the health status of drivers or co-passengers when we ride by taxis. In this global corona virus pandemic, being healthy has become more important for us. Since the virus is known to every human, neither Corona is the first virus in the universe nor is it the last. So, to guarantee our protection as well as that of others. This paper has come up with application to installing Health detection system in the vehicles which comprises temperature sensors to detect the temperature of each person seating inside vehicle, camera to identify the movements and gesture of each person inside the vehicle and another temperature sensor and the ultrasonic sensor outside the car to identify the infected person near the vehicle [6]. These peripherals will be programmed to read gesture or temperature of passenger inside the vehicle and distance along with temperature about the person present outside the vehicles. If the system analyse something which would not be normal it would instantly show up the warning on the main screen and after this system tells the driver about the infected person and what precaution should driver or passengers should take to make themselves save or prevented to get infected. After this system pop up the location of the nearby clinic and hospital in the main screen to help the passenger and the driver.

All of this is achieved in real time and allows the driver and passenger to behave correctly as well. This device can also identify new passengers in the car, and when the passenger exits the vehicle, it will automatically spray the sanitizer into the vehicle. The main goal and objective of this application is to verify and assist the health of passengers and drivers by applying this application to the vehicle system.

The connection between the driver and passengers can be better by knowing the health condition of each other and can easily take taxi without any fear of getting infected. Usually in passenger vehicles such as Uber, Ola and so on passengers usually sit in the car for definite period of time [7]. While the driver is unaware of his passenger's health conditions it is very much possible that the other person maybe suffering from contaminable diseases. For the period of time in which passenger sits inside the vehicle it triggers the spread of diseases in a closed cabin where exchange of air takes place in a closed chamber. Hence to overcome this issue, this paper have come up with the technique "HEALTH DETECTION SYSTEM" for a vehicle.

CONCLUSION

This paper explores and designs an application in vehicles through the implementation of a health detection device in vehicles to detect the health status of the passenger and driver. A two-temperature sensor, monitor, ultrasonic sensor, GPS navigator, main screen and GSM module are included in the proposed device. In the outer part of the car, one temperature sensor and an ultrasonic sensor are mounted to detect the person coming near the car and the data obtained from the devices and sensors are reflected on the screen as the person is a few metres away from the 104 degree body temperature vehicles. Over the mirror edge is an external temperature sensor, camera and main screen located within the vehicle. This system works when the passenger enters the vehicles and the sensors begin to check the movement of the human body's body temperature or gesture. If with the result calculation person is found to be healthy then the driver continue to drop the person in the respective placed asked by the But if the estimate is found to be unhealthy, the drive will drop the passenger at the nearest hospital as stated in this paper's methodology. And a sanitizer spray will be donated to the car after dropping the passenger to the hospital to prevent other co-passengers from being sick.

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