

Vehicle Health Monitoring System

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Abstract: Vehicles need maintenance and repair after a set period of time, and if they are not serviced at regular intervals, they may be involved in an accident. The project's goal is to warn the owner on a continual basis of changes in tyre air pressure, exhaust gas quality, wear on brakes, oil leakage, excessive heating of the engine, or a blockage in the fuel pipe, among other things. The use of a tyre pressure monitoring sensor allows for real time tyre pressure readings, while a gas sensor provides information on the amount of carbon dioxide (CO₂), Nitrogen Oxides (NO_x), and other pollutants in the exhaust, which indicates the proper working condition of the engine. A flow sensor is also used in the engine to detect overflow or leakage of oil, and a temperature sensor is also used to warn the owner when the engine is overheating. A fuel flow sensor is also used to detect the proper flow of everything gathered from the sensors is shown on an LCD display device connected with the arduino microcontroller.

INTRODUCTION

Many modern automobiles are equipped with a diverse array of systems and components that perform a variety of functions when the vehicle is in motion or parked. It is possible that the vehicle's separate systems or components may fail as a result of frequent operation over time. The failure of a single component or system has a negative impact on the entire performance of the car. The most effective method of ensuring that a vehicle's performance continues to improve over time is to execute specified regular inspection and repair in a defined manner. Manual inspection takes years of knowledge, which is why an electronic vehicle health monitoring system is being developed. Monitoring systems are becoming more common in today's environment. They are widely used to monitor a variety of metrics inside a system or an entity, among other things. For example, we come across monitoring systems to read the health of a patient, monitoring systems to govern data and voice communications, and monitoring systems in a variety of different sectors. Monitoring systems are devices that automatically monitor measurements, gather status data, and store it for later use. They are used in a variety of applications. When a particular parameter surpasses a limit that is specific to that parameter, the state data is gathered at periodic intervals or at other times.

LITERATURE REVIEW

Das et al[1] presented a vehicle accident and location monitoring system for use in commercial vehicles. The location of the car and the site of the accident are discovered. Primary care is provided as soon as the accident information becomes accessible via this method. Anusha and colleagues[2] developed a system based on the LPC2148, which includes capabilities such as data archiving in a database. GPS and GSM modules are included in the scope of the task. [3] Imteaj et al. created an Android-based application that detects an accident and sends an alarm message to the closest police station and medical care facility. In order to extract the outward force of the vehicle body, this

application is arranged using an external pressure sensor on the vehicle body. [4] Mayuresh et al. [4] described a system that makes use of an open source platform and is intended to monitor and trace the location of a vehicle. The framework also checks fuel consumption, engine temperature and vehicle speed, and communication is accomplished through the use of GPS/GPRS/GSM modules. Prasanth and colleagues[5] developed and implemented a model that is based on the Raspberry Pi and an Android application for a smart phone. Manali et al[6] presented a system that consists of an Android mobile phone that has been integrated with GPS and GSM modules, as well as a CPU that has been installed in a car. For example, the framework proposed by Harum et al[7] is built on top of the Raspberry pi and connects to a 3g/4g dongle that is used as a modem. [8] Navod et al[8] developed and deployed a vehicle tracking system that included vehicle monitoring, vehicle control, and vehicle status information.

CONCLUSION

In addition, the vehicle health monitoring system gives accurate information on all fundamental characteristics that influence or indicate how well a vehicle is performing. Due to the continuous flow of information, we can detect damage early on and fix any problems before they occur, thereby improving the overall performance of the car. Additionally, this system will send accurate information to the owner, ensuring that when the car is serviced, the repair facilities do not disclose incorrect information and charge the owner additional money.

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