

Near-real time vehicle diagnostic data collection and on-line vehicle monitoring system

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Recently, the number of vehicles running on roads has increased in manifolds resulting in increased traffic congestions on the roads and thus, wasting fuel and the time of passengers. It is a major contributor to environmental pollution and causes severe health hazards. Within this backdrop, this paper presents a development of a real time vehicle data collecting system and online monitoring system.

The On-Board Diagnostic (OBD) is a self-diagnostic and reporting capability introduced to the vehicles in 1968. The new OBD interfaces provide standardized real time communication between the OBD and diagnosing equipment. At present, the OBD has become the standard interface for all automobiles. However, OBD is used only for vehicle diagnostics during a repair and has no standard way to collect or store historical data except for a few proprietary solutions.

This system collects and transmits data in real time to a server. The system is connected to the OBD port through a commercially available OBD module using serial communication and AT commands (modem control commands start with “AT”). The module is connected to a smart phone via Bluetooth and the phone is connected to a web server via GSM communication. An android application developed for smart phone manages the data transfer between the OBD and the server.

The data stored in the server is visualized through a web application. It has several graphical modules to visualize the data as graphs, tables and route maps with idle points. These modules facilitate to interpret data to analyze individual trips, the bottlenecks of traffic, the idling time and fuel wastages. Using this information, the user can draw travel plans based on the previous routes and their traffic conditions at different times of a day. Also, these modules enable to get a better understanding of the performance of the engine and predict problems in advance.

This system would help drivers to be aware of fuel consumption, the driving behavior, traffic patterns and associated costs so that they can change their behavior to save fuel and time. Hence, this can be a potential future tool in creating fuel friendly driving patterns by recommending alternative mobility solutions thus reducing time and fuel wastage.