

Survey Paper on Smart Vehicle System

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Abstract - Some basic problem with the two-wheeler vehicle is we cannot track vehicle, we cannot measure fuel during refueling, sometimes we forgot to take care vehicle service. So, we can Assure to solve the above problems with Smart Vehicle Kit. It has the characteristic of information, integration and intelligent. It can display function in wide range, and is a real-time, accurate, highly effective intelligence diagnosis, tracking and maintenance management system.[2]

Index Terms - Vehicle Maintenance, Fuel Measuring, Gps Tracking, Speed, Distance, Fingerprint Authentication

I. INTRODUCTION

Smart Vehicle Kit specially for two-wheeler vehicles. We are going to present Smart Vehicle Kit for Vehicle tracking, Fuel measuring, Fingerprint authentication, Anti-theft protection, Health report of vehicle. Defining this smart vehicle kit, we can study & implement the current technologies used in development & useful for our personal use. We are trying to implement it for two-wheeler vehicles.

A. Use of Smart Vehicle Kit

- 1) We can live track vehicle through website using GPS.
- 2) We can find out speed of vehicle, vehicle route.
- 3) We can generate vehicle report like fuel status, distance report, start/stop report and etc.
- 4) We can check vehicle maintenance status and notify about it.
- 5) We can check fuel filing status during Refuelling.

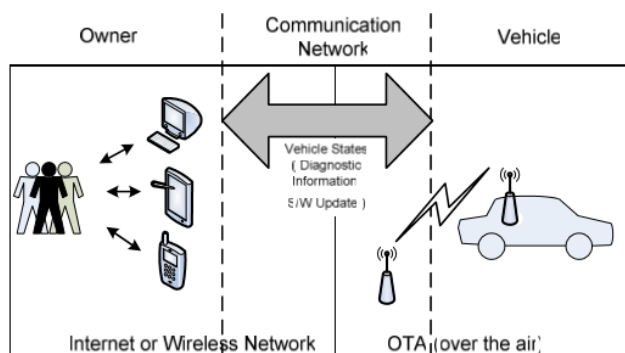


Fig.1 System Architecture[3]

B. Scope

Vehicle owner can Live tracking of vehicle, Fuel measuring, Fingerprint authentication, Anti-theft protection, Health report of vehicle and generates reports like start/stop report, distance report, fuel report and etc. User can Access all the features through Smart Phone.

C. Overview

Over the past decades the technological development of vehicles has developed rapidly and today almost everything in a vehicle is controlled by electric/electronic systems. In addition, the telematics service developed on IT technology. telematics service consists of two part. First part is personal information service, other part is diagnostic service. Currently, Diagnostics and collision prevention telematics services are more important than the personal information telematics services. So, in this paper, we propose a very flexible and efficient system for automotive diagnostic and the update of the vehicle's software using a telematics device between the remote download DM server and the local ECUs within the vehicle. This system will enable the user to inquire and configure the vehicle status in real-time using a personal computer or mobile via wireless network. Also, the user and auto mechanism engineers can diagnose software failures and upgrade the software modules. [3][9][10][11][12]

II. EXISTING SYSTEM

A. Literature survey

We have observed some of the existing system.

1) Remote Telemetry and Diagnostic System for Electric Vehicle

Electric Vehicles (EVs) have become a popular alternative to Internal Combustion Engine Vehicles (ICEVs) due to its ability to be replenished by renewable sources of energy. Despite its advantages, EVs still possess some major disadvantages, which have reduced the take up rate of EVs by consumers. This project is therefore proposed to provide a user-centric solution to evaluate and to encourage the use of EVs. In particular, the project aims to establish a remote telemetry and diagnostics System for EVs. In this project, a database system has been developed, which is used with a compatible data acquisition system. The developed database system is able to store the relevant and useful information for the EV users, and they may be used by engineers and researches to conduct data mining for research and development purposes. In addition, smart phone application has been developed for the iPhone to provide EV users with real-time critical information that will alleviate the anxieties mentioned above. Furthermore, a tablet application has also been developed to give technicians access to vital information regarding their clients' EVs, and also to past information, which is useful when diagnosing a problem.[4][5][6][7][8]

2) Remote Vehicle Management System based on OMA DM Protocol and AUTOSAR S/W Architecture

Over the past decades the technological development of vehicles has developed rapidly and today almost everything in a vehicle is controlled by electric/electronic systems. In addition, the telematics service developed on IT technology. telematics service consists of two part. First part is personal information service, other part is diagnostic service. Currently, Diagnostics and collision prevention telematics services are more important than the personal information telematics services. So, in this paper, we propose a very flexible and efficient system for automotive diagnostic and the update of the vehicle's software using a telematics device between the remote download DM server and the local ECUs within the vehicle. This system will enable the user to inquire and configurate the vehicle status in real-time using a personal computer or PDA via wireless network. Also, the user and auto mechanism engineers can diagnose software failures and upgrade the software modules.[3][9][10][11][12]

3) The Remote Fault Maintenance Support System of Logistics Carry Vehicle Based on Network.

Road transport is one of the most important parts of logistics carry. In order to improve efficiency and quality of logistics carry, It is required that diagnose and maintain remote trouble carry vehicle rapidly. This paper researched the Remote fault Maintenance Support System of Logistics carry Vehicle based on network. Some techniques including embedded computer, wireless communication, network communication and database are used to build logistic carry vehicle remote fault diagnosis and maintenance system, in this system, carry vehicle's situation can be detected in time, and can be connected to the canter of remote maintenance support by wireless communication. Trouble automobile can be remotely diagnosed and received maintenance technique assistance, realize remote diagnosis and maintenance to logistic carry vehicle. The efficiency and feasibility for reducing the time of faulty diagnosis and maintenance, sharing the information resource, improving the carry vehicle availability and credibility and reducing repaired cost are proved by application.[2][13][14][15]

4) Vehicle Maintenance Experience Environment.

With the rapid development of car industry in China, the vehicle maintenance is facing lots of new demands. However, our car repairers are not ready for this. Their professional skills are only at a low level that can not suffice the requirements of the modern Vehicle maintenance. With a view to improve their technical skills, we construct a small VR training system. It embodies the principle of car engines. Repairers can learn systematic knowledge about auto parts and work process before actual operations in this virtual environment, shortening training time and reduce the rate of accidents.[1][16][17][18][19][20]

B. Drawback of existing system

- Most of system does not provide for two-wheeler vehicle.
- System is available for high cost.
- Fuel Measuring not accurate in most of all system.
- Fingerprint authentication not available in any system.

III. DIFFERENCE BETWEEN EXISTING SYSTEM

PARAMATER	EXSISTING SYSTEM			
	REMOTE DIAGNOSE	OMA DM SYSTEM	REMOTE TELEMETRY	VEHICLE MAINTENANCE
Vehicle Type	Logistic carry vehicle	Cars	Electric vehicle	No
Fuel Measuring	No	Yes	No	No
Engine Diagnose	Yes	Yes	Yes	Yes
Coast	High	High	High	High
Fingerprint	No	No	No	No

Authentication				
Remote Engine Start/Stop	No	No	No	No
Real time Tracking	Yes	No	Yes	No

IV. OBJECTIVE AND SCOPE

A. Objective

1. The system of remote fault maintenance support system for two-wheeler vehicle takes GPS/GSM/GPRS, INTERNET, as well as information network technology as support.[2]
2. The system is established through effective fusion of advanced information technology, data communication technology, automatic control technology, remote detection, vehicle theory, artificial intelligence, as well as the information processing technology, and is applied in the fault diagnosis and maintenance support for two-wheeler vehicle.[2]
3. It has the characteristic of information, integration and intelligent. It can display function in wide range, and is a real-time, accurate, highly effective intelligence diagnosis and maintenance management system.[2]

B. Project Scope

Vehicle owner can Live tracking of vehicle, Fuel measuring, Fingerprint authentication, Anti-theft protection, Health report of vehicle and generates reports like start/stop report, distance report, fuel report and etc. User can Access all the features through Smart Phone.

V. FUTURE ENHANCEMENT

- Provide accurate fingerprint authentication with minimum time computation.
- Implementation of Smart Vehicle System for 4 and more Wheeler vehicles.
- Implementation of AI and Cloud Computing for Smart vehicle System. So, Owner get nearest Service Station.

VI. CONCLUSION

The Smart Vehicle kit is help to Vehicle Owner to keep their vehicle clean and maintain the vehicle health report. It allows the vehicle owner to remote diagnose vehicle in mobile and personal computer. It also provides anti-theft protection so owner have no need to worry about his/her vehicle.

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