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RFID Based School Children Monitoring With Vehicle Management System

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ABSTRACT - Smart automatic vehicle management system using RFID technology is proposed. The safety of children is ensured by implementing a smart automatic vehicle management that monitors and tracks the children and automatically sends safety alarm as notification to parents. Children information at entry level will be recorded automatically when they pass by the scanner. At the same time, parents will automatically receive the SMS from the system that provide information about their children entry/exit from the school bus. The vehicle emission monitoring is also a key factor, which is implemented by identifying the overheating in vehicle through temperature sensor and the smoke problem.This proposed work is applied in real-time scenario, which is mainly helpful in contributing to the enhanced tracking of school children safety,driver's behavior through eye-blink sensor and the heartbeat sensor.And monitoring the vehicles without any malfunction and further complication. malfunctioning and curtailing further complications.

I . INTRODUCTION

Children safety is of utmost importance to their parents. Despite the best safety measures, children, due to their lack of skills to protect themselves, may end up in a situation that endangers their life (e.g. crossing the road without paying attention to traffic). In this project, we focus on a particular risk associated with the daily bus trip to and from school. There have been previous incidents where a child is forgotten in the bus and eventually die because of suffocation. To improve transportation safety, some schools employ a bus supervisor to look after the children inside the bus. Nonetheless, human oversight or supervisor absence may still lead to a heartbreaking ending as in the previously cited stories. This project presents a system to monitor the daily bus pick-up/drop-off of children to enhance the overall safety of the daily bus transportation to/from school. The system aims at automatically detecting when a child boards or leaves the bus and issue an alert message when a child does not board or leave the bus to reduce the parents' concerns about using the bus for the daily transport of their children without being lost or forgotten.

We also monitors "Vehicle monitoring system" is to manage vehicles. Maintaining records of vehicles and data are a complicated in manual process moreover it is difficult to generate reports. Maintaining records of vehicles reports is much easier with "vehicle monitoring System", It's easier to maintain entries of vehicles in database automatically by software rather than doing it by manual process, with this system there is a possibility to maintain in and out times easily. There is a feature provided in this system to generate daily reports monitoring of vehicles can be done automatically.

Whenever vehicle entered into the organization the in time and out time is noted automatically by the RFID device. Monitoring can be done easily administrator can easily generate reports and verify the owner of the vehicle. This system helps in Loss of vehicles because of automated system. The records which are maintained manually are automated with this device and our software. Overall this Vehicle monitoring system simplifies the task of managing vehicles by security guards and made automated system.The need for a safer environment in the presentsituations is of prime importance. Safer environment entangled with the secure surrounding facilitates to gift a serene atmosphere. Recently, all over the world, the number of crime rates over children is increasing day by day. Parents are worried about their children due to mishaps and missing of children.This RFID technology is used in the electromagnetic fields to automatically identify and track the tag attached to

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the objects. This tag acts as a transceiver, which does both transmission and receiving, which in turn works on both active and passive tags. The RFID device serves the same purpose as a bar code or a magnetic strip on the back of a credit card or ATM card; it provides a unique identifier for that object. The RFID device must be scanned to retrieve the identifying information, similar to the way a bar code or magnetic strip is scanned to get the information.The RFID reader's function is to interrogate RFIDtags. Radio Frequency Identification consists of three components as RFID tag, RIFD reader. The information of child is send to their respective parents. With a numbers of students commuting along distance to the school, school administrators and parents recognized the need for enhanced measures to ensure the safety of the children. This system should recognize each child and detect when every child boards or leaves the bus. Once the vehicle enters the gate the particular vehicle number will send to the management.The person who does not have this particular tag has to make an entry in the main gate, therebyefficiently avoiding trespassing in the school premises.which consists of different sensors that are connected to a micro-controller, which is responsible for the collection of the garbage in a smart manner.

II . EXISTING SYSTEM

There are two methods of recording/entering the vehicle numbers for tracking the vehicle. First is the traditional manual method where one person has to write through a sheet of paper and issues a receipt. The other one is the management method, where the person needs to show the Identity (ID) card to the system installed at the department and also he should have to enter their respective vehiclenumbers to open the Gate or to pass through the gate. The existing system uses only an image basedapproach. It does not support minutiae approach. It takes long time identification and also the result is not accurate [5]. Guardians always concerned of the safety of children. School children are not allowed to carry their cell phones to the school. Notfeasible for the school authorities to call each parent. For working parents, another concern is whether their children have reached home safely in time after school [6]. The next concept is based on the vehicle entering into the school or college gate. In some schools, security will stand nearby the gate to keep track of the vehicle's number and by doing this in a monotonous way, it consume lot of valuable time and subsequently it will create the traffic problem and also contribute to much pollution in the long run, it's difficult to identify the problem which is occurs in the vehicle but in proposed we are identifying the overheating in vehicle which will identify through temperature sensor and the smoke problem will identify through gas sensor. The next method is based on gas sensor and temperature sensor. Due to continuous works for engine, it will get overheated and sometimes the overheated method will start getting smoke.so to avoid this problem we are using the cooling motor to lessen the heat dissipated [7].

III PROPOSED SYSTEM

The parents are worried about their child's safety. Working parents are even more concerned as they are unable to leave their jobs and take care of their children due to personal economic problem .So, to overcome this issue, the project is implemented by using RFID and GSM technology to secure their children. Every student will be holding with their particular tags. Once they entered into the school bus they have to keep their particular tag on the RIFD reader. After placing their tag the status about a particular child will be updated to their parent in the form of SMS by using Global System for Mobiles Communications technology.By using this RFID technology in the main gate we can monitor the traffic, avoid fuel loss and we can save time at the entrance [8]. The next method is the vehicles will have a separate tag, once they entered into the gate, the particular t a g ' s c a r number will send to the management through GSM method. The vehicle information is stored in the microcontroller based on the TAG number. There are three components namely RFID tag, RFID reader and an antenna, to communicate with RFID tag. Once the vehicle crosses the main gate then, the vehicle number will automatically send to the management using GSM technology [9].

The GSM technology works on the AT commands (Attention commands).For smart eye counting, we are using MATLAB language. If the engine gets overheated we can identify them by using temperature sensor and smoking sensor or gas sensor(MQ2).For temperature sensor is identified by the LM35.this sensor will adapt with current environment [10].The Arduino will convert the mini voltage to degree/Celsius. The overheated engine will generate to next level that is it will startemitting smoke. For this default we are using the cooling motor to reduce the heat. The membrane ispresented inside the smoking sensor, if the engine gets overheated then it will start smoking, the some voltages are generated.The generated voltage will transfer to 802A5.There is

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only the formation of gas the cooling motor will not work but the message will be send to management and the particular driver's particular number [11]. Then, the work makes use of relay for cooling motor and also using electronically controller mechanic switch. Another important step towards our project is that the monitoring of driver's behavior through eye-blink sensor and the heartbeat sensor

BLOCK DIAGRAM

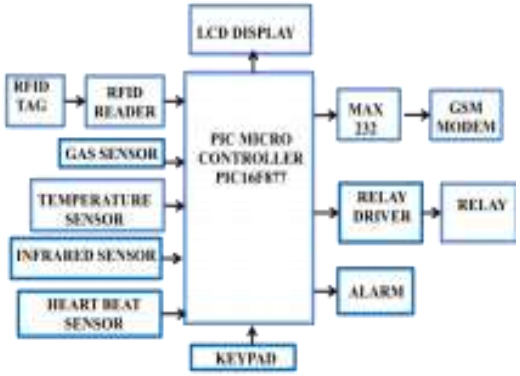

Fig 1. Overall system design

IV BENEFITS OF THE PROPOSEDSYSTEM

The proposed system has several benefits as listed below in comparison with the existing systems:

- Children will be safe and secure.
- Parents tension and agony about their children safety will be abated
- The management will store every vehicle number and trespassing will be avoided.
- Management will have the recorded proofto show if any problem occurs or any complaints in future.
- The driver health condition will be check up
- Vehicle health monitoring method is also done to check working condition ofvehicle.
- This system recognizes each child and detects / monitors when every child boards or leaves the bus.
- The message is immediately communicated to the parents, once the child is inside the school bus through GSM technology**.**
- Once the vehicle enters the gate of the school premises, the particular vehicle's registered number will be sent automatically to the management.
- Vehicle health monitoring is also done by identifying theoverheating in vehicle through temperature sensor and the smoke problem (vehicle emitting smoke) through the use of gas sensor.

V IMPLEMENTATION AND RESULTS

In this proposed method, once the children enter into the bus the RFID will detect the children position and the message will be communicated to the parents directly. If the vehicle gets overheated, it will be identified through temperature sensor. The smoke problem will be identified through the gas sensor. This information will be communicated to the driver as well as to the school management. As the vehicle enters into the campus, the registered number of thevehicle will be scanned using RFID and this will be automatically sent to management [12]. Here, withthe help of step-down transformer, the AC supply is converted into DC supply to automatically change the voltage. During conversion, to avoid repulsive action, the filter capacitor is used as a supportive component.

In arduino, the AT commands are used to send the information to GSM.

In fig.2, the message communicated to the parents of the children boarding the school bus is represented. Children information at entry level will be recorded automatically when they pass by the scanner. At the same time, parents as well as the school management will be automatically notified by receiving the SMS from the system that provide information about their children entry /exit from the school bus, as shown in fig.3.

Apart from ensuring safety to children, the system also ensures the proper functioning of the vehicle by means of periodic vehicle health check-up and monitoring. As shown in fig.4, the acting driver of the vehicle will be notified immediately when there is any malfunctioning of the vehicle in terms of engine problem like smoke emission, over heating, and so on. Vehicle health monitoring is also done by identifying the overheating in vehicle through temperature sensor and the smoke problem (vehicle emitting smoke) through the use of gas sensor and immediate necessary actions will be taken by the driver or the management to ensure proper functioning of the vehicle.

Fig2.Children to reach van.

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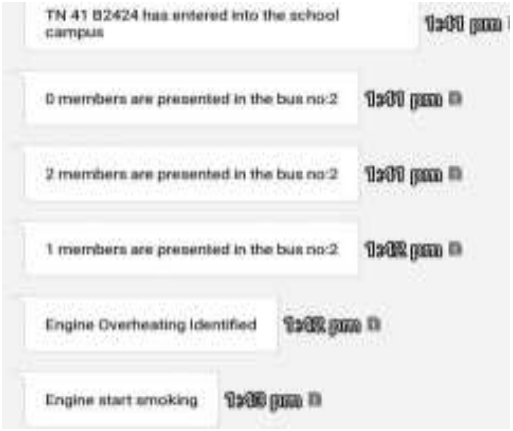

Fig.3. Screenshot of sending SMS to Management.

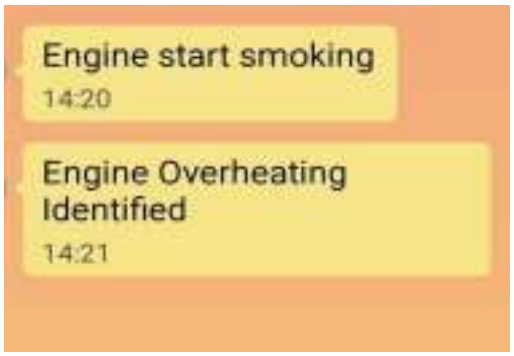

Fig.4. Screenshot of sending notification as SMS (GSM) to Driver.

Fig 5 Hardware module

VI .CONCLUSION AND FUTURE WORK

In this project we have designed with RFID based school children monitoring with vehicle management system.The safety of children is ensured by implementing a smart automatic vehicle management that monitors and tracks the children safety by automatically sending safety alarm as notification to parents.At the same time parents as well as the school management will be automatically notified by receiving the SMS.Apart from child safety tracking framework, the vehicle monitoring system is implemented by mens of temperature and gas sensor,cooling motor and transformers.If any problem or issue arises in the vehicle like engine emitting smoke, overheating or gas leakage,then this information is immediately collected and sent to the school management,as well as acting driver for the vehicle,so that the problems can be overcome and abated immediately.The driver health condition is also monitoing by means of IR sensor and Heartbeat sensor.If the driver eyes closed for a particular time then the alarm will be "ON" and the brake will be applied.This proposed work is applied in real-time scenario, which is mainly helpful in contributing to the enchanced tracking of school children safety and monitoring proper functioning of vehicles without any malfunctioning and curtailing further complication.Thus the work overcomes the limitations of existing system in an efficient manner, by smart monitoring and tracking for ensuring safety measures for children as well as for the vehicle and driver.

As part of the future work, the objective of implementing environmental awareness with eco friendly surroundings can be considered with efficient monitoring of pollution control from the vehicle and overcoming the unexpected real-time problems, by constant monitoring and reporting of engine chassis, which may arise due to improper vehicle management and servicing.

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