Real Time School Bus Arrival Indication System using Different sensors

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Abstract—The strict majors taken for children safety by the authorities the crimes over children are increasing the significant amount. School authorities may be the penalized heavily for these mishaps, So school bus monitoring is an effective major to restrict these mishaps. In this paper propose an embedded system which focuses on children safety, tracking of school bus and exact location of school bus with the help of longitude and altitude positioning of GPS and sending information through the SMS. Two IR sensors are used to check whethere a student is arriving or leaving bus.We also provide speedometer which checks speed of bus,and also using LCD display.

Keywords— childrens safty, GSM, GPS, bus track, sensors, LCD Display

I.   INTRODUCTION

Many number of children travels through the school bus daily in various cities,countries of world. Safe and secure transports of children is the most important priority for scool authorities and in this paper   intends to introduce safty and school bus tracking .

A system is proposed for a safety along with the entering or exiting of a student from the bus. Name of each student is displayed on LCD display which will in turn let driver know whether a child is still inside or not by counting through IR sensors. In case of over speed of school bus buzzer is provided, let driver to know speed should be minimized for safety of children. The combination of a GPS system and a GSM is the found effective for various another real time working systems, so it is found of compatible with the proposed work.

By using this system, it is the possible to analyze the location of a school bus and information about driver and the children whether it has follows a track. Thus proposed system should be able to enhance efficacy of system. In different fields   tracking   systems are   running now-a-days enhancing a overall system performances here.

In this paper there are VI sections, The section I gives brief introduction about the below topic. The Literature survey is presented in section II. Methodology is explained in section III. Section IV describes sensors used in this system. Simulated and experimental results are shown in Section V, while section VI throws light on Future Scope and concludes the paper.

II.   LITERATURE SURVEY

Most of the real time arrival systems, currently in use, are completely web based applications and android bases.. For example, 'Next Bus' a popular bus tracking service in United States provides the passenger with a website where he or she can login to find out the location of the buses and textual time estimates projecting the next bus arrival at a particular stop[2]. The paper idea is to put an end to incidents like Innocent children are ending their lives for unworthy reasons[3].Real-time vehicle tracking and management system has been the focus of many researchers, and several studies have been done in this area. [5]. The system monitors the children inside the bus in a safer manner. It uses the combination of RFID (Radio Frequency Identification), GPS (Global Position System) technologies. Each Student carries out a unique RFID card embedded in each of the student's have school bags.

When the student enters or exits from the bus the reader records and transfer data in the database[3]. The system will enable parents to receive instant SMS alerts when bus is within 10 minutes of designated pickup and drop off points reducing the time the child spends on the street. The system will also notify parents via SMS when the child boards and alights from the bus or enters and leaves form the school. If a child is still inside the bus for a predefined time after the vehicle's engine is turned off, and doors are closed, and the message will be sent to the school authorities[1]. Dynamic bus time-table using GPS [4] is a GPS based and manual system designed to display the real-time location and timetable of buses which can be useful for any public transport system. The system requires working internet connection and may or may not be GPS tracker. Real time bus monitoring system using GPS [4] displays the current locations of the bus. The system consisted of a transmitter installed on the buses and receiver boards installed on the bus stops. It provided the relevant bus routes and other information their clients.

The system shows an efficient and systematic way of using RFID tracking applications coupled with smart phone technologies to fulfill the key security and monitoring purposes. In order to optimize the proposal, this paper investigated the effects of variable localization of RFID tags from reader and power loss, inefficiency and distance constraints caused due to equal power allocations to the tags. Reducing the number of reader by using smart antenna in RFID and increasing coverage area, several other sectors will be hopefully able to leverage the benefits of RFID technology.[3]
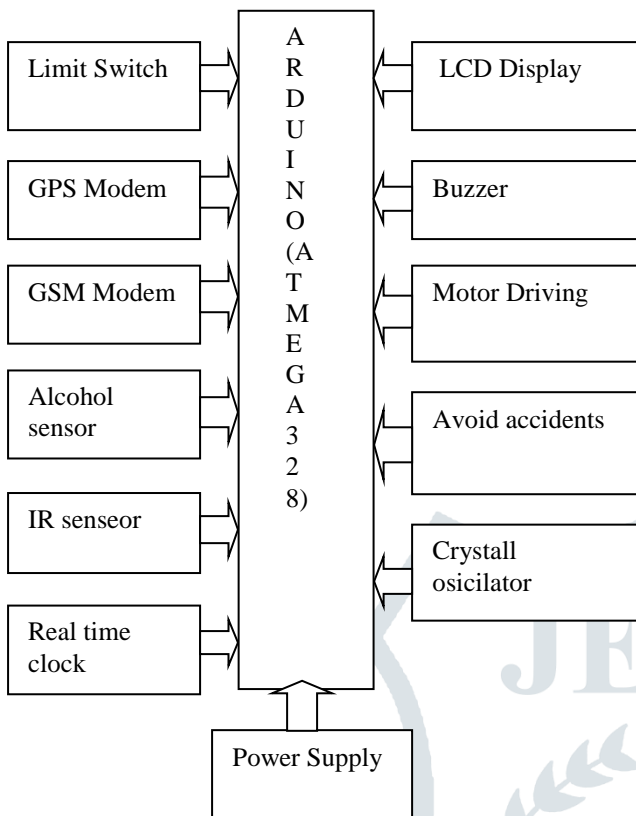
III.   METHODOLOGY

Figure 1: Block diagram of School bus arrival indication system

A) Limit Switch: A limit switch is a switch operated by the motion of machine part or presence of an object. They are used for the controlling machinery as a part of control system, as safety interlocks, or to the count objects passing a point. They can be determine the presence or absence, passing, positioning, and end of the travel of an object. They were first used to define the limits of travel of an object, hence the name of the "Limit Switch". Limit switch acts as a open or closed to the bus door.

B) GPS Modem: A gps navigation is the device,which is the gps receiver, or simply gps is a device that is capable of receiving information from gps satellites and calculate the device's in a geographical position.It shows the proper school bus location to students and their parents.

C) GSM Modem: A GSM modem is a device which can be either a mobile phone or a modem device which can be used to make a computer or any processor communicate over the network. A GSM modem requireds a SIM card to be operates over a network range subscribed by the network operator.

D) Real time clock: A real time clock is a computer clock (most often in the form of an integrated circuit) that keeps track of the current time. The term often refers to the devices in personal computers, servers and embedded systems, RTCs are present in any electronic device which needs to keep the accurate time.

E) LCD Display: Liquid crystal display is the technology used for displays in notebook and other smaller computers. For example light emitting diode and gas-plasma technologies,

LCD's allow a displays to be much thinner than the cathode ray tube technology. Some of the passive matrix LCD's have dual scanning, that they scan the grid twice with current in the same time that it is took for one scan in a original technology. However, active matrix is still a superior technology.

F) Buzzer: A buzzer or beeper is a audio signalling device, which may be a mechanical, electromechanical, and the piezoelectric.Typical uses a buzzers and beepers include the alarm devices, timers, and confirmation of the user input such as a mouse click or key stroke. If the Bus driver drunk or sometimes he blinks him eyes for the reason of sleep then the buzzer will activate for bus driver and gives the report to controll room or school principle.

G) Arduino (ATMEGA)**:** Arduino is open-source hardware. The layout and production files for some versions of the hardware are also available in this software.

IV. SENSORS

A) IR Sensor: IR sensor are used for a eye blinking purpose in this system. If the driver blinks his eyes the normal rate then the output will be low which means motor driver is not in drowsy. If the driver closes his eyes for the particular set time,then the sensor calculates the time depending upon the calculated time it gives a output to the high indicating that driver is in drowsiness.

This is the extra long range sharp distance sensor bounces IR off objects to determine the how far away they are. And it is returns an analog voltage it can be used to the determine how close the nearest object is to comes with 6" long 6-JST interface wire. These sensors are a good for detection between 100cm to 500cm (1-5 meters / 3-15 feet).

B) Alcohol Sensor: It is used as a person or bus driver drunk a drink or not. An alcohol sensor detects the attentiveness of alcohol gas in the and an school bus and analog voltage is an output reading. The sensor can activate at the temperature ranging from -10 to 50° C with the power supply is less than 150 Ma to 5V.
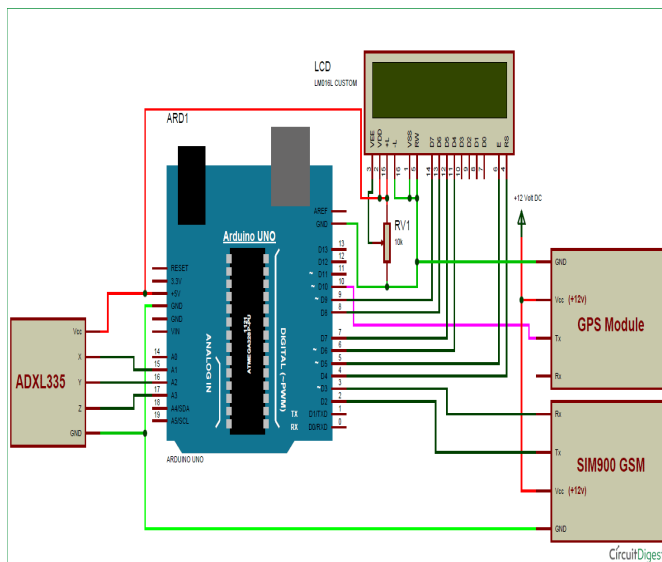
V. RESULT AND ANALYSIS

Figure 3.Circuit diagram of bus tracking system

We are using IR sensor in the school bus, it is use to count the students who enter in the bus and leaving bus. In that the GPS track exact location of the bus however their childrens are pickup. But it has safty purpose or convey the message to parents and the principle at that time if bus location has been exchange.

Thus a bus running in a particular route will have to the transmitter module installed inside it. This transmitter module is what to sends the data of the location of this particular bus. Since the GSM module is used in the both transmitter and receiver modules and every module will have a unique number. LCD display 16*2 which is used for the the show student counting and bus track location in every stop. GPS detects the exact location and send message through the GSM module we are using in this circuit diagram.

VI. CONCLUSION AND FUTURE SCOPE

In this paper,we are presented a digital and smart bus tracking system.It is a based on GSM system,GPS system,and google map system.Basically it is tracks the bussess their arrival time at the specific bus stops and gives the information to the users and parents through the SMS's.In future we plan to enhance the system with the some other tools and statical anyasis of different components to modify system.

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