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Real Time School Bus Arrival Indication System

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Abstract:

The strict majors taken for children safety by the authorities the crimes over children are increasing on significant amount. School authorities may be 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 focues 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 safety along with entering or exiting of student from 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 GPS and GSM is found effective for various another real time working systems, so it found compatible along with proposed work.

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

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]. Two types of RFID tags are in common usage there are a passive tags, in which have no internal power supply and emiting a radio frequency signal only in the response to a query from the transponder, and active tags which are internally powered and which continuously emit a radio frequency signal. While passive tags are less expensive, active tags have higher reliability and transmission power[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 a unique RFID card embedded in each of the student's 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. Parents will take the appropriate action because they have precise answers to boarding status and times. 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]
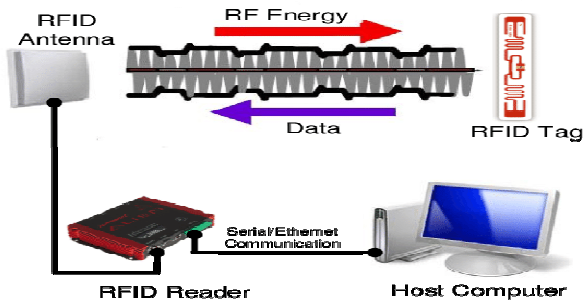

Figure 1: Passive RFID system.
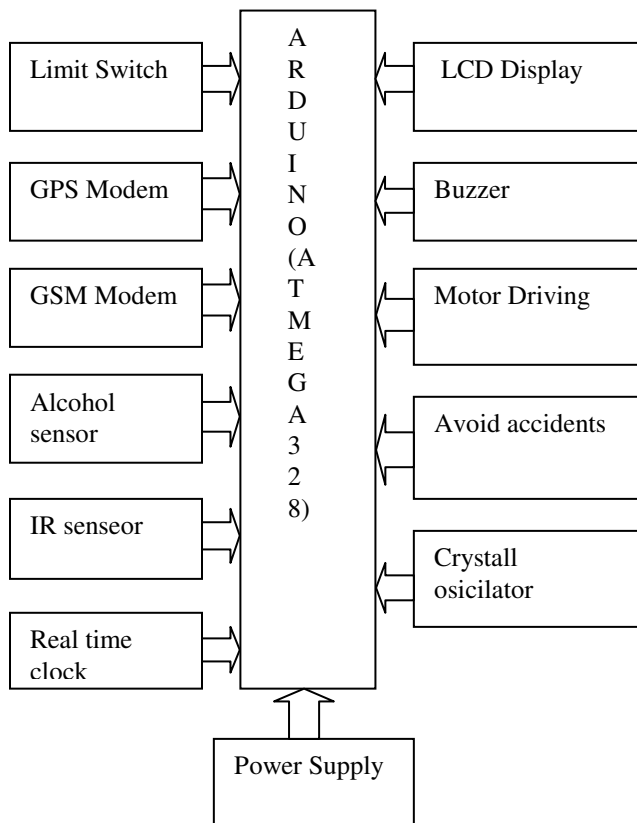
III. METHODOLOGY

Figure 2: Block diagram of School bus arrival indication system

A) Limit Switch: Limit switches are used in a variety of applications and environments because of their ruggedness, ease of installation, and reliability of operation. They can 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 device, gps receiver, or simply gps is a device that is capable of receiving information from gps satellites and then to calculate the device's geographical position.

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 requires a SIM card to be operates over a network range subscribed by the network operator.

D) Real time clock: A real time clock (RTC) 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. Like light emitting diode and gas-plasma technologies, LCD's allow displays to be much thinner than cathode ray tube technology.

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

IV. SENSORS

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

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

(1-5 meters / 3-15 feet). An IR sensor can measure the heat of an object as well as detects the motion.

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. The sensing range is from 0.04 mg/L to 4 mg/L, which is suitable for breathalyzers.
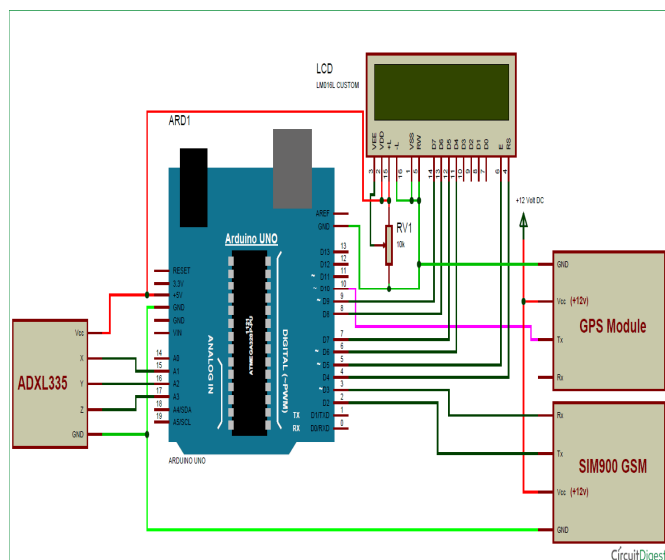
V. RESULT AND ANALYSIS

Figure 3.Circuit diagram of bus tracking system

We are using IR sensor in the school bus, it can use to count the students who enter in bus and leaving the 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 principle at that time if bus location has been exchange.

Thus a bus running in a particular route will have to transmitter module installed inside it. This transmitter module is what sends the data of the location of this particular bus. Since GSM module is used in both transmitter and receiver module 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 have to use in circuit diagram.

VI. CONCLUSION AND FUTURE SCOPE

This system has been design on arduino board by using different sensors. With the help of GPS technology parents will receive the message by which we can ensured the safty of childrens. Furthermore, our system is low-cost as it doesn't require any external hardware for location tracking.

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