SCHOOL CHILDREN TRANSPORTATION SAFETY ENHANCEMENT

CHALLA HARIKA¹ Mr. ASHOK²

¹Challa Harika, M.Tech Student, Aryabhatta Institute Of Technology & Science, Maheshwaram X Roads, On Srisailam Highway, Rangareddy Dist, Telangana, India.
²Mr. Ashok, M.Tech, Assistant Professor, Aryabhata Institute Of Technology & Science, Maheshwaram X Roads, On Srisailam Highway, Rangareddy Dist, Telangana, India.

Abstract: This paper presents a system to monitor pick-up/drop-off of school children to enhance the safety of children during the daily transportation from and to school. The system consists of two main units, a bus unit and a school unit. The bus unit the system is used to detect when a child boards or leaves the bus. This information is communicated to the school unit that identifies which of the children did not board or leave the bus and issues an alert message accordingly. The system has a developed web-based database-driven application that facilitates its management and provides useful information about the children to authorized personal. A complete prototype of the proposed system was implemented and tested to validate the system functionality. The results show that the system is promising for daily transportation safety.

Keywords—RFID system, RTC, GPRS, ARM-7.

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 paper, 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 [1-2]. 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 paper 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.

II. HARDWARE SYSTEM

Micro controller: This section forms the control unit of the whole project. This section basically consists of a Microcontroller with its associated circuitry like Crystal with capacitors, Reset circuitry, Pull up resistors (if needed) and so on. The Microcontroller forms the heart of the project because it controls the devices being interfaced and communicates with the devices according to the program being written.

ARM7TDMI: ARM is the abbreviation of Advanced RISC Machines, it is the name of a class of processors, and is the name of a kind technology too. The RISC instruction set, and related decode mechanism are much simpler than those of Complex Instruction Set Computer (CISC) designs.
Liquid-crystal display (LCD) is a flat panel display, electronic visual display that uses the light modulation properties of liquid crystals. Liquid crystals do not emit light directly. LCDs are available to display arbitrary images or fixed images which can be displayed or hidden, such as preset words, digits, and 7-segment displays as in a digital clock.

III. BOARD HARDWARE FEATURES

GPRS:
GPRS (general packet radio service) is a packet-based data bearer service for wireless communication services that is delivered as a network overlay for GSM, CDMA and TDMA (ANSI-136) networks. GPRS applies a packet radio principle to transfer user data packets in an efficient way between GSM mobile stations and external packet data networks. Packet switching is where data is split into packets that are transmitted separately and then reassembled at the receiving end. GPRS supports the world's leading packet-based Internet communication protocols, Internet protocol (IP) and X.25, a protocol that is used mainly in Europe. GPRS enables any existing IP or X.25 application to operate over a GSM cellular connection. Cellular networks with GPRS capabilities are wireless extensions of the Internet and X.25 networks.

RFID:
Radio Frequency Identification (RFID) is a silicon chip-based transponder that communicates via radio waves. Radio Frequency Identification is a technology which uses tags as a component in an integrated supply chain solution set that will evolve over the next several years. RFID tags contain a chip which holds an electronic product code (EPC) number that points to additional data detailing the contents of the package. Readers identify the EPC numbers at a distance, without line-of-sight scanning or involving physical contact. Middleware can perform initial filtering on data from the readers.
frequency in order to communicate. RFID systems use many different frequencies, but the most common and widely used & supported by our reader is 125 KHz.

Tags are classified into two types based on operating power supply fed to it.

1. **Active Tags**
2. **Passive Tags**

**Active Tags**: These tags have integrated batteries for powering the chip. Active Tags are powered by batteries and either have to be recharged, have their batteries replaced or be disposed of when the batteries fail.

**Passive Tags**: Passive tags are the tags that do not have batteries and have indefinite life expectancies.

**Fig 4**: Different types of tags

**IV. CONCLUSION**

This paper presented an RFID-based system that aims at enhancing the safety of children during the daily bus trip to and from the school. RFID-based detection unit located inside the bus detects the RFID tags worn by the children. It then sends, via a GPRS modem, the relevant data to the system database server. The system checks and detects which child did not board or leave the bus and issues an alert message to this effect. In addition, the system checks the children's attendance and updates the database. The parents can log into the system website and monitor the details of their children.

**V. REFERENCES**


**AUTHORS**

**STUDENT DETAILS:**

NAME: CHALLA HARIKA
Qualification: M TECH
Mail Id: chharika410@gmail.com
Phone: 9032429881

![Author Image](image1.png)

**GUIDE DETAILS:**

NAME: MR. ASHOK
Qualification: MTECH
Designation: ASST. PROF
Mail Id: ashok2036@gmail.com
Ph No: 9640809291

![Guide Image](image2.png)