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# Infant Safety Automobile Alarm System Using GSM Module

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**ABSTRACT:** This abstract introduces the safety of infants during car and bus journeys is paramount, yet incidents of infants being left unattended in vehicles continue to occur, often with tragic consequences. To address this critical issue, this paper proposes an innovative Infant Safety Automobile Alarm System utilizing GSM (Global System for Mobile Communications) and PIR (Passive Infrared) technology. The system is designed to detect the presence of an infant in a vehicle and promptly alert caregivers or authorities in the event of potential danger. The PIR sensors installed within the vehicle continuously monitor for the presence of heat signatures, specifically focusing on the presence of an infant. Upon detecting the presence of an infant, the system activates, initiating a series of predefined actions. The core component of the system is its integration with GSM technology, enabling real-time communication and alerts. When triggered, the system sends an alert message to preconfigured mobile numbers, notifying caregivers or authorities of the situation. This timely notification ensures swift intervention, potentially averting hazardous circumstances. In conclusion, the proposed Infant Safety Automobile Alarm System offers an effective solution to mitigate the risks associated with leaving infants unattended in vehicles. By leveraging the combined capabilities of GSM and PIR technology, the system provides reliable detection and immediate alerts, enhancing the safety and well-being of infants during car and bus journeys.

**KEYWORDS:** PIR, GSM Module, Sensors

## I. INTRODUCTION

In our fast-paced world, ensuring the safety of our children is a top priority. One area that demands special attention is the transportation of children, particularly in school buses. To address this concern, innovative solutions have been developed, and one such breakthrough is the Infant safety automobile alarm system. This intelligent and reliable system aims to protect our little ones during their daily commute, providing peace of mind to parents, guardians, and school authorities alike. The Infant safety automobile alarm system is specifically designed to prevent incidents of children being left unattended or forgotten on school buses, offering a robust layer of protection against potentially dangerous situations. This cutting-edge technology combines advanced sensors, real-time monitoring, and instant alert mechanisms to create a comprehensive safety net within the confines of a school bus. Imagine a scenario where a child accidentally falls asleep or remains unnoticed at the end of a bus route. The Infant safety automobile alarm system immediately detects such situations, triggering a series of prompt actions to ensure the child's safety. By employing a multi-layered approach, the system provides an effective and fool proof solution to address this critical issue. In the event that a child is unintentionally left behind, the Infant safety automobile alarm system instantly alerts the driver through a combination of visual and auditory signals.

### 1.1 PROBLEM STATEMENT

- The system developed here is a moderate budget automobile safety system for children.
- Minimisation in cost leads to compensation in performance



## 1.2 OBJECTIVE

- An infant safety automobile alarm system is a device designed to prevent children from being left unattended on a school bus.
- The system uses sensors to detect the presence of children on the bus and sends an alarm signal to the driver if a child is left behind.
- When the bus driver locks the bus, the child safety alarm system is activated, the system uses sensors to detect the presence of children on the bus. The most common type of sensor used is a pir sensor located on the top of the bus.
- The alarm is typically a loud sound or series of sounds that can be heard both inside and outside the bus.
- The infant safety automobile alarm system is a crucial safety feature that can help prevent tragic incidents of children being left unattended on school buses.

## 1.3 SCOPE AND STUDY

Child safety is an important concern for parents and caregivers, particularly when it comes to transportation. A bus alarm system that ensures the safety of children on school buses is a great idea, and there are many potential future developments and improvements that could be made to such a system. The future scope for child safety bus alarm systems is vast, and there are many potential developments and improvements that could be made to improve child safety on school buses. By incorporating the latest technology and safety systems, these systems could provide greater peace of mind for parents and caregivers and help to reduce the risk of accidents and injuries

Some possible future scope for a child safety bus alarm system could include:s

- Improved Sensors and Detection Systems: Future versions of child safety bus alarm systems could incorporate more advanced sensors and detection systems that are able to detect a wider range of events, such as sudden stops, sharp turns, and even vehicle collisions. This could help to alert drivers and caregivers to potential dangers and prevent accidents before they occur.
- Real-Time Monitoring and Alerts: Advanced monitoring systems could be incorporated into the child safety bus alarm system, which could allow for real-time monitoring of bus movements and the location of children on the bus. Alerts could be sent to caregivers and parents via mobile devices or other means, providing them with peace of mind and helping them to stay informed about their child's whereabouts at all times.
- Integration with Other Systems: Future versions of child safety bus alarm systems could be integrated with other transportation and safety systems, such as traffic monitoring systems, school attendance systems, and emergency response systems. This would allow for greater coordination and communication between these systems, which could help to improve overall safety and reduce the risk of accidents.
- Automated Response Systems: Future versions of child safety bus alarm systems could incorporate automated response systems that are able to take action in the event of an emergency. For example, if a child falls ill or becomes injured on the bus, the system could automatically contact emergency services and provide them with the child's location and other important information.

## II. COMPONENTS

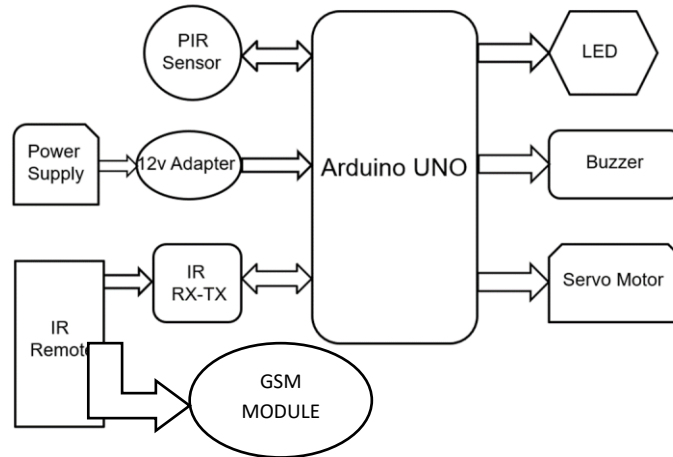
### COMPONENTS AND SPECIFICATIONS:

- Arduino UNO
- PIR sensor
- IR sensor
- IR Remote
- Servo motor
- GSM module
- Buzzer



- LED
- Arduino IDE software
- Embedded C programming

**BLOCK DIAGRAM**

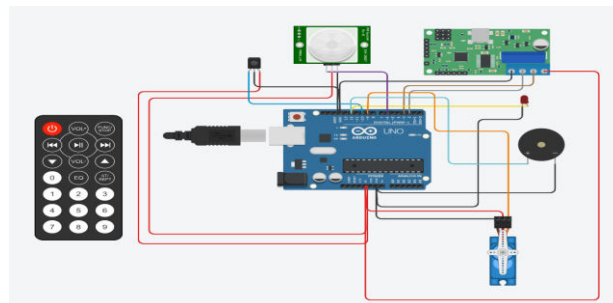


**Fig -1:** Block Diagram of Infant Safety Automobile Alarm System.

**WORKING**

When the driver locks the bus or car using the remote the Infant safety automobile alarm system starts to work. If there is any child movement inside the bus the PIR sensor will sense the movement and triggers the indicators, alarms and opens the door automatically. The driver or the authority of the school will be alerted by a phone call. The alarm will be on until the child was taken out. To turn of the alarm the driver should press the reset button located at the center of the dashboard. If there was no child present inside the bus while the driver locks the door then the door will be closed and no alert system is triggered.

**CIRCUIT DIAGRAM**



**Fig -2:** Circuit Diagram of Infant safety automobile alarm system

**III. RESULT AND DISCUSSIONS**

The device that we have developed consists of PIR sensors and a GSM Module. When the driver locks the bus or car using the remote the Infant safety automobile alarm system starts to work. If there is any child movement inside the bus the PIR sensor will sense the movement and triggers the indicators, alarms and opens the door automatically. The driver or the authority of the school will be alerted by a phone call. The alarm will be on until the child was taken out. To turn of the alarm the driver should press the reset button located at the center of the dashboard. If there was no child present inside the bus while the driver locks the door then the door will be closed and no alert system is triggered.



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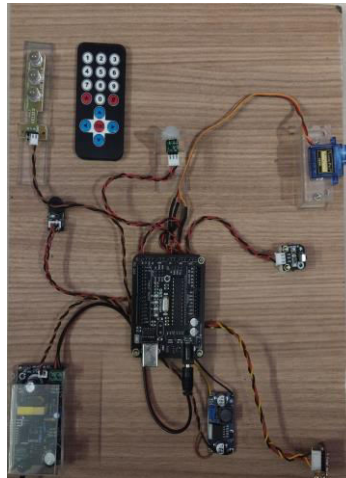


Fig -3: Hardware Kit

#### IV. CONCLUSION

In conclusion, In this paper, we discussed how we are going to ensure the safety of children in automobile. This system is low cost and user friendly, thus attracting more customers and increasing demand for it. Such a system can provide peace of mind for parents and guardians, as well as school authorities and bus drivers. It can also help prevent tragic incidents that could result in serious injuries or even death. The implementation of a infant safety automobile alarm system is a vital step towards ensuring the safety of children during school transportation. It should be considered a necessary investment for any school district or transportation company that is committed to protecting the wellbeing of its young passengers.

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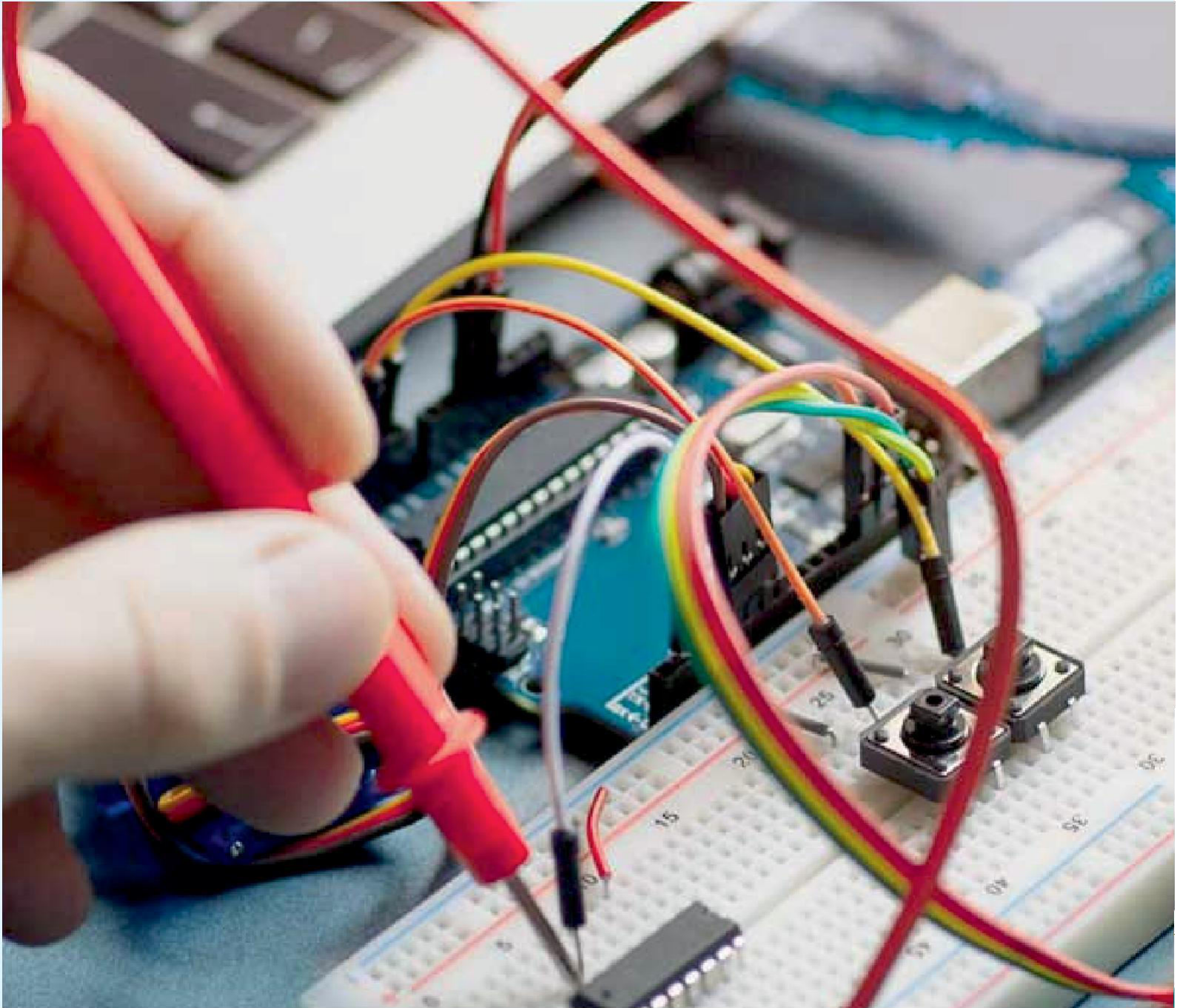
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