

# Anti Theft Travel Bag

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**Abstract:** *"Anti-Theft Travel Bag" project aims to design and develop an innovative and secure travel bag to address the rising concerns related to theft and unauthorized access during travel. This project introduces a comprehensive solution by integrating cutting-edge technologies and design elements to create a highly secure and user-friendly travel companion. This project introduces a novel security system utilizing two microcontrollers for trolley and owner communication via Bluetooth. When the owner is nearby, designated as "A," a continuous signal maintains the trolley in a stable state, allowing effortless movement by the owner. However, when the owner is distant, marked as "B," any attempt to move the trolley activates a vibration sensor, triggering a GSM module. This prompts the trolley to signal the owner through a smart buzzer, ensuring heightened security against potential theft.*

**Keywords:** *Arduino Nano, HC-05 Bluetooth Module, GSM Module.*

## 1. INTRODUCTION

The integration of advanced technology into everyday objects has led to groundbreaking innovations in security systems. This project introduces a sophisticated solution employing two microcontrollers, one dedicated to the trolley and the other to the owner, establishing seamless communication via Bluetooth. The system operates on the principle of proximity, where the transmission of specific signals—labeled as "A" when the owner is nearby and "B" when distant—ensures the trolley's stability

and initiates security measures accordingly. By employing vibration sensors and GSM modules, the system responds dynamically to any unauthorized movement, instantly alerting the owner through a smart buzzer. This innovative design, powered by batteries, offers a versatile and discreet security apparatus that can be seamlessly integrated into a trolley or concealed within an anti-theft travel bag, presenting an effective and adaptable solution for theft prevention and real-time owner notifications.

a) **Arduino Nano:**

The Arduino Nano is an open-source breadboard-friendly microcontroller board based on the Microchip ATmega328P microcontroller (MCU) and developed by Arduino.cc and initially released in 2008. It offers the same connectivity and specs of the Arduino Uno board in a smaller form factor.

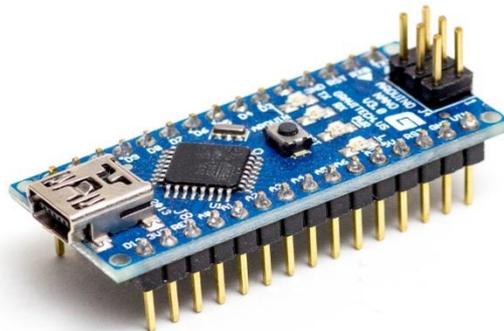


fig. 2

**b) Bluetooth Module:**

Bluetooth Communication is a 2.4GHz frequency based RF Communication with a range of approximately 10 meters. It is one of the most popular and most frequently used low range communication for data transfer, audio systems, handsfree, computer peripherals etc.

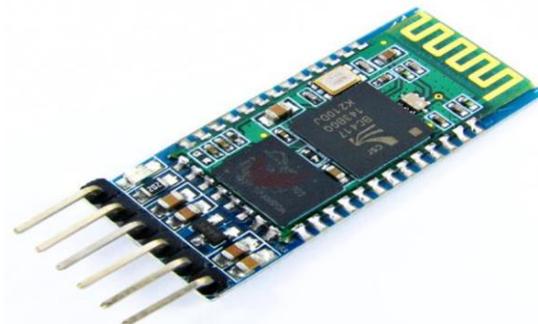


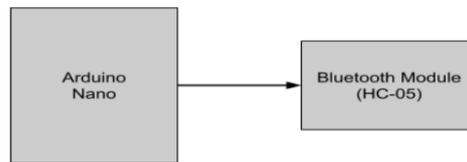
Fig.3

**c) Vibration Sensor(HC-05):**

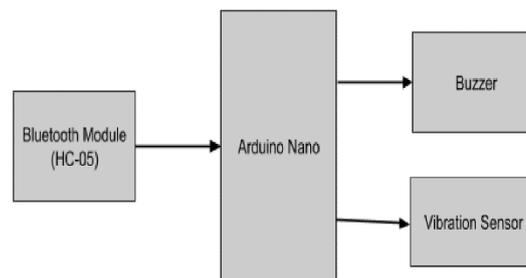
A The vibration sensor is also called a piezoelectric sensor. These sensors are flexible devices which are used for measuring various processes. This sensor uses the piezoelectric effects while measuring the changes within acceleration, pressure, temperature, force otherwise strain by changing to an electrical charge. This sensor is also used for deciding fragrances within the air by immediately measuring capacitance as well as quality.



iv. Block Diagram



Block Diagram 1 - First Block Diagram shows the Transmitter system which shows that in this project we used Arduino nano as a microcontroller, and we used a Bluetooth Module (HC-05) as an output device.



Block Diagram 2 - Second Block Diagram shows the receiver module which shows that we used Arduino nano as a microcontroller, and we used a bluetooth module (HC-05) as an input device in it. And a buzzer and vibration sensor as an output device.

## 2. METHODOLOGY

Initially the proposed system functions through synchronized cooperation among its key components. The Bluetooth-enabled microcontrollers establish continuous communication. When the owner is nearby (signal "A"), this connection maintains the trolley's steady state, facilitating easy movement. Upon the owner's absence (signal "B"), the system activates vibration sensors, detecting any unauthorized trolley movement. This triggers the GSM module, which promptly sends a signal to the owner through a smart buzzer, alerting them to the potential theft. The discreetly positioned system, powered by batteries, operates seamlessly within the trolley or an anti-theft travel bag, ensuring comprehensive security and real-time notifications, thus effectively deterring theft and safeguarding possessions in public environments.

## 3. ADVANTAGES & DISADVANTAGES

i. Advantages

Anti-theft travel bags are designed with security features to protect your belongings while you're on the move. They typically have hidden compartments, slash-proof materials, locking zippers, and RFID blocking pockets, making it harder for thieves to access your valuables. This added security can provide peace of mind, especially when traveling in crowded areas or unfamiliar destinations.

ii. Disadvantages

Often travel bags is that they can become bulky and cumbersome, especially when fully packed, making them difficult to manage in crowded spaces or tight quarters.

#### 4. APPLICATIONS

- 1) Perfect for navigating busy airports, train stations, or tourist attractions where pickpocketing is common.
- 2) Useful for exploring cities and crowded streets, providing peace of mind against theft in bustling areas.
- 3) Ideal for commuting on buses, trains, or subways, where bags are more susceptible to theft in crowded or cramped spaces.
- 4) Suitable for hiking, camping, or exploring remote areas where securing belongings is essential.
- 5) Great for backpackers traveling through hostels, shared accommodations, or public transportation, where securing belongings in shared spaces is crucial.
- 6) It can be used as everyday bags for individuals living in urban environments where theft is a concern.
- 3) It can help doctors to carry the medicines from one ward to another.
- 4) The main purpose is to rescue the people by extinguishing fire in a building.

#### 5. CONCLUSION

The innovative security system designed for trolleys presents a comprehensive solution to the persistent challenge of safeguarding belongings in public spaces.

Through its sophisticated integration of Bluetooth communication, microcontrollers, vibration sensors, GSM modules, and a smart buzzer, the system offers a proactive approach to theft prevention. By differentiating owner presence and absence, it ensures trolley stability when the owner is nearby while swiftly alerting them in case of unauthorized movement. Its portability, discreet design, and real-time notifications mark a significant advancement in addressing the security concerns associated with unattended possessions. Promising enhanced peace of mind and asset protection for individuals in diverse settings.

#### 6. REFERENCES

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