



Smart Keychain Device

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ABSTRACT

The "Smart Keychain IoT Project" is a compact and versatile solution designed to enhance the functionality and security of a traditional keychain using Internet of Things (IoT) technology. This project integrates various sensors and wireless communication capabilities into a keychain, allowing users to remotely monitor the location of their keys, receive notifications, and ensure the safety of their belongings. The Smart Keychain aims to provide convenience and peace of mind for users who often misplace or want to keep track of their keys.

Keywords: GPS module, buzzer module, wifi, micro controller, Bluetooth module, power source

1. INTRODUCTION

An IoT keychain is a small, portable device that integrates with your keys. It leverages the power of the Internet of Things (IoT) to provide smart features. Imagine never losing your keys again! With an IoT keychain, you can locate your keys using your smartphone or any web-enabled device. The developed IoT-based keychain is equipped with a buzzer to produce a beep sound when the webpage is activated to find the missing keys. Some improvements can be made to the project. A GPS module could have been used in the smart keychain finder. IoT-based smart keychains are equipped with IoT (Internet of Things) technology. They can connect to your smartphone or other devices through wireless communication, allowing you to easily track and locate your keys. Some smart keychains also have additional features like remote control capabilities

or notifications to help you keep track of your keys. They are convenient solutions for those of us who tend to misplace our keys often.

Traditional keychains serve the basic purpose of holding keys but lack features for location tracking or providing real-time notifications. When keys are misplaced, finding them can be

time-consuming and frustrating. There is a need for a smart and connected solution that offers additional functionalities to address these challenges.

2.2.LITERATURE REVIEW

The proposed Smart Keychain integrates IoT components, including GPS, sensors, and wireless communication, to create an Intelligent and connected key management system. Users can track the location of

their keys through a mobile app, receive notifications when keys are out of range, and remotely activate features such as a buzzer for easier locating. This project aims to provide users a convenient and efficient way to manage their keys.

3.CONCLUSION:

GPS Module:

- GPS stands for Global Positioning System modules are devices that receive signals from satellites to determine your precise location.
- GPS works by calculating the distance between your GPS module and multiple satellites in space.

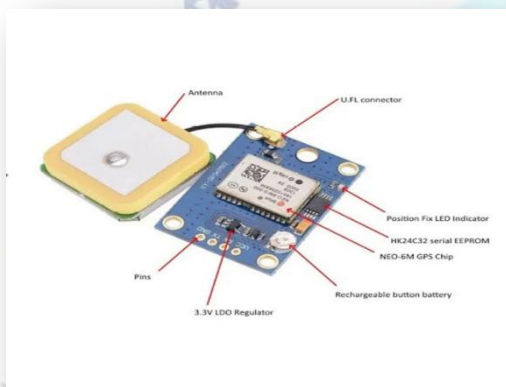


Fig. GPS module

- Enables real-time location tracking of the keychain.
- GPS modules are commonly used in navigation systems, tracking devices, and various IoT applications.

2. Wireless Connectivity (e.g., Bluetooth or Wi-Fi):

- Wireless connectivity using Wi-Fi
- Wi-Fi is a popular way to connect devices to the internet or each other without the need for physical cables.
- Allows communication between the keychain and a mobile app.



Fig. Wireless connectivity (Wi-Fi)

- Wi-Fi has become an essential technology in our daily lives, providing convenient and reliable wireless connectivity.

3. Buzzer:

- The buzzer module is essentially a small speaker that can produce different tones and sounds when activated.
- You can get creative and make your projects more engaging with the buzzer module.



Fig. Buzzer module

- Can be remotely activated to help locate the keychain.

4. Compact Design:

- Consider a compact and durable enclosure for your smart keychain to protect the electronics. You can find a small plastic case that fits your design.
- The design compact and lightweight will ensure that your smart keychain is practical and easy to carry around.



Fig. Compact design

- Maintains the small and convenient form factor of a traditional keychain.

4. WORKING PRINCIPLE

A smart keychain using IoT typically involves a small device equipped with IoT technology, such as Bluetooth or RFID. It connects to a mobile app or a centralized system to offer various functionalities. Here's a basic overview of how it works:

1. Connection:

- The smart keychain communicates with a mobile device or a central server using wireless technologies like Bluetooth Low Energy (BLE), RFID, or NFC.

2. Mobile App Integration:

- A dedicated mobile app is often used to manage and interact with the smart keychain. The app can provide features like locating the keychain, setting up alerts, or managing access permissions.

3. Location Tracking:

- IoT-enabled keychains often have GPS or proximity sensors, allowing users to track the location of their keys through the connected app.

4. Remote Access:

- Users can remotely control certain features of the smart keychain through the app. This might include locking/unlocking doors, activating alarms, or triggering notifications.

5. Security Features:

- Some smart keychains incorporate security measures like encryption to protect user data and prevent unauthorized access.

6. Battery Management:

- Since these devices are portable, they usually run on a battery. Smart keychains often include power-saving features or rechargeable batteries, and users can monitor battery levels through the app.

7. Integration with Smart Home Systems:

- For added convenience, smart keychains may integrate with other smart home devices or systems, allowing users to create automation scenarios or control multiple devices from one platform.

Overall, a smart keychain using IoT enhances convenience, security, and control over personal belongings by leveraging connectivity and smart features.

Hardware Tools:

1. Microcontroller (e.g., Arduino or ESP8266/ESP32):

- The ESP8266 module is a popular choice for adding wireless connectivity to Arduino projects.
- It has a microcontroller and Wi-Fi capabilities, allowing you to connect your Arduino to the internet and create IoT applications.
- It is a powerful and affordable microcontroller for adding wireless capabilities to your Arduino projects.



Fig. Microcontroller (Arduino)

- Controls the functions of the Smart Keychain.

2. GPS Module:

- GPS works by calculating the distance between your GPS module and multiple satellites in space.



Fig. GPS module

- Provides location data for real-time tracking.

3. Wireless Module (e.g., Bluetooth or Wi-Fi):

- Enables communication with the mobile app.

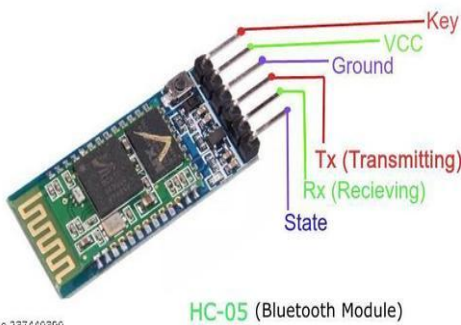
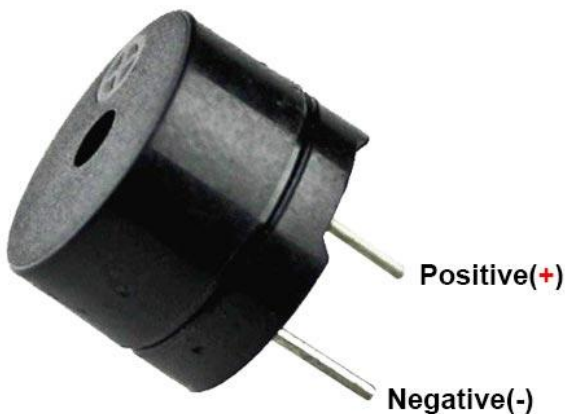


Fig. Bluetooth Module

4. Buzzer:

- Produces sound for locating the keychain.



- You can get creative and make your projects more engaging with the buzzer module.

5. Power Source:

- Battery or rechargeable power source for continuous operation.
- A rechargeable power source, like a rechargeable battery or a built-in lithium-ion battery, can be charged multiple times, reducing the need for frequency battery replacements.

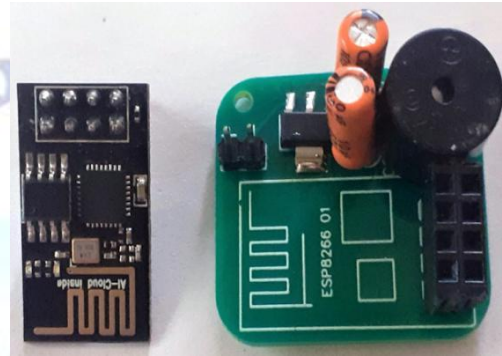


Fig. Power source

- Consider the convenience, cost, and environmental impact when choosing the power source for our smart keychain.

CONCLUSION

There is a need to be able to keep track of important assets in indoor environments. As people lose their belongings like keys, pen drives, wallets, and hand purses have become a common issue. Again, the belongings are lost mostly due to misplacement. So, there is a need for a system or application that can locate lost assets cheaply and efficiently. This paper gives a survey of different techniques used for tracking the objects and an abstract view of the system that we are going to implement to solve the issues related to the existing system.

We are implementing the system with the use of BLE beacons which can be described as small devices broadcasting their identities using Bluetooth Low Energy. In this paper, an IoT-based Key finder using ESP8266-01, Buzzer, and Battery is attached to the keys. The system has developed a webpage dedicated to finding the missing keys. The missing keys can be found using the Google Chrome webpage from the mobile phone. The developed IoT-based keychain is equipped with a buzzer to produce a beep sound when the webpage is activated to find the missing keys. Some improvements can be made to the project. A GPS

module could have been used in the smart keychain finder. With the help of this keychain finder, the user could have easily tracked the missing keys. A message system could have been programmed to alert the user about finding their missing keys. Instead of a webpage, the user can use an Android app to track the missing keys.

Conflict of interest statement

Authors declare that they do not have any conflict of interest.

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