

SMART LUGGAGE TRACKING AND ALERT SYSTEM USING ARDUINO

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ABSTRACT

Luggage Tracking is developed to avoid loss or mishandling of Passengers Luggage which creates stress for the passengers. The proposed system consists of a Microcontroller called Arduino which gets connected to the luggage through an RFID that provides the location details to the GSM. The retrieved data is processed to the cloud database, each user is provided with userID and password. If the user needs to know his status of the luggage, he or she can log into his/her ID and identify the position of the misplaced luggage. In addition to it a Fingerprint sensor is used to make the luggage more secure.

KEYWORDS: Luggage Tracking, RFID Tags, Arduino UNO, Alert System, GSM module, GPRS, Fingerprint Sensor, IoT Cloud

I. INTRODUCTION

LuggageTracker is proposed in such a way that its a lightweight device with latest technology and advanced security system made for human traveling where people lose their luggage in public areas like airports, railway stations. So, it is very essential to track the luggage in case of loss and theft. The android software provides the location status of luggage. It also has a Fingerprint Sensor to keep their important things safe and secure and if anyone who accesses the fingerprint other than you it will send a message to your mobile phone. In addition to it also stores the unauthorized and authorized location details in the cloud.

II. SYSTEM ARCHITECTURE



Fig-1 : System Architecture

III. BLOCK DIAGRAM AND ITS WORKING

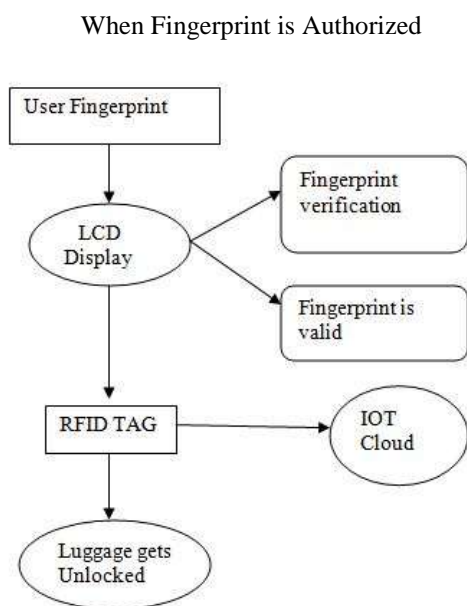


Fig-2 : Authorised Fingerprint

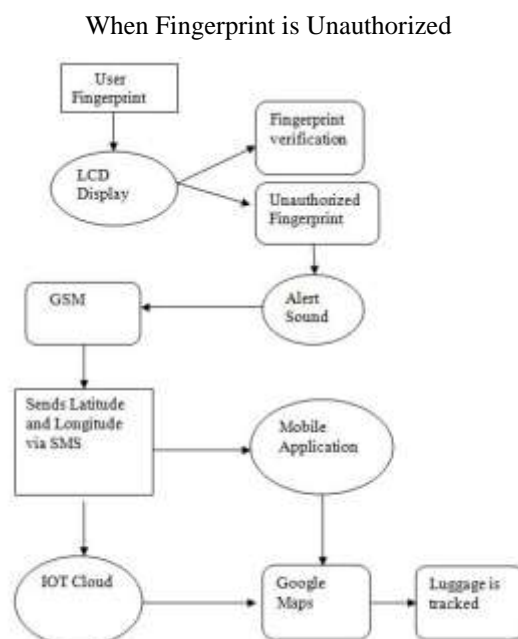


Fig-3 : Unauthorised Fingerprint

- In this project, Arduino is the microcontroller which controls the input-output (I/O) operation of the other components.
- A Fingerprint sensor is used to unlock the luggage and to keep the things safe and secure in case of loss or theft
- If an unauthorized person access the luggage it sends a message to the users mobile denoting its latitude and longitude through GSM and GPS
- Wi-Fi Module is used for an authorized person to access the luggage within a limited location
- The unauthorized and authorized details get stored in the IoT cloud and the user can determine the location anywhere and anytime
- A Mobile application is also used for easy access for the user to locate his/her bag.
- If the fingerprint is authorized the LCD shows like the fingerprint is valid and by showing the suitable RFID tag to a suitable RFID reader. It reads the magnetically stored information in the RFID tag. If Both match it unlocks the lock.

IV. EXISTING SYSTEM

This article consists of a microcontroller called Raspberry Pi which acts as the main component for input and output devices. In addition to it uses a camera to keep the bag secure. The System works on an alarming basis where an alarm is set up with Arduino board and GPS and the alarm is turned on when the luggage is lost or goes outside from a particular range.

CONS:

- By using camera, security is less compared to fingerprint.
- The cost of implementing hardware is high and people cannot afford the luggage.
- It doesn't provide any cloud-related data for further reference.

V. PROPOSED SYSTEM

The Proposed System consists of an Arduino UNO as a microcontroller which controls all input and output devices. This project uses a fingerprint to keep the luggage secure. It is more secure than other biometrics. It comes with GSM which helps us to triangulate its location when GPS is failed to retrieve the data and it is one-way communication and it doesn't require third-party software. The System works with a Fingerprint Scanner which helps to unlock the luggage using registered Fingerprint. If any unauthorized person accesses the luggage it gives an alarm sound and it sends its location to the mobile phone via SMS. The RFID tag is also used in this project to provide a unique ID to the luggage. The unique id gets stored in the cloud. In addition to it, the system also comes with an IoT cloud where it stores the location details of the luggage when an unauthorized person accesses the luggage or in case of loss or theft.

PROS:

- Fingerprint Sensors brings more secure and reliable when compared to other biometrics.
- It comes with both GSM and GPS if GPS failed to retrieve the data it communicates through GSM.
- It also offers an RFID tag for a unique ID of Fingerprint.
- It also comes with the Cloud database for further references.

VI. LITERATURE SURVEY

The article[1] "Luggage Tracking System Using IoT" deals with luggage tracking system is designed to identify the luggage which gets misplaced from the public and other areas. When people travel, there is always a risk of theft of the luggage and bags which is where the proposed system comes into account. The luggage tracking system works on an alarming basis where an alarm is set up with the Arduino Uno board and a GPS module. Also, the alarm is turned on as soon as the bag is theft and goes outside a particular range. Finally, a map is created through which we can track the location of the bag In this, the IoT components are being used like Arduino Board and a GPS Module to track the bag and a frontend or mobile application is created to monitor.

In this article[2] "Smart Luggage Tracker" provides a major loophole in the Aviation industry is luggage mishandling. Luggage is often misplaced or lost and cases of damage to belongings are common. In this article, we proposed and implemented a luggage tracking and handle system using RFID tag which gets stored on cloud server. This algorithm is highly secure and the details of passengers and airlines are fetched in it. A prototype at the two locations of check-in and check-out are developed. A authentic-time location is also detected and fetched in a cloud server. Each passenger has a unique RFID code that has to be entered on the website to know the exact location and status of their luggage. Details include the exact time of arrival of luggage, location, net weight before and after loading. This information lets the passenger take necessary action if the luggage has been misplaced, stolen or tampered.

The article[3] "Smart Bag with Theft Prevention and Real-Time Tracking" establishes the studies related to smart bag. This technology enhances that the bag can be activated only by the owner and also location can be tracked using GPS and GSM.

In[4] "Rail Rush System for Crowd Analysis" The proposed system provides the location of the train along with the number of crowds in each coach. The user will be able to track the train anywhere and can catch the train easily. For the number of crowds, there will be an image processing technique. GPS will be used for tracking the train.

In this article[5] "Using RGB-D sensors for the detection of abandoned luggage" This article provides functioning in dynamic environments. This approach consists of two sensors, the RGB and Depth sensor. The RGB sensor is used to extract type of discarded pieces of luggage and verify them. The Depth sensor is used to identify users and remove persons from the list of assumed objects.

In this paper[6] "RFID Application to Airport Luggage Tracking as a Green Logistics Approach" provides a

Green Airport luggage tracking system by developing RFID architecture, components, functioning, and middleware roles and then provides access to RFID data making authentication methods more robust and flexible.

This article[7]“Remote Control and Tracking Dual-Mode Smart Suitcase” provides an intellectual travel case that can be vaguely inhibited. It can be used in airports, railway stations, etc. In an open and large space, the travel case can find the users position and track it and in case of a busy place, the working direction can be controlled. This system is also useful for cargo Handling.

In[8] “Tripartite Authentication Protocol RFID/NFC Based on ECC” The proposed system is based on the communication between the reader and the background. If it is unsafe the reader and background mutually authenticate each other besides the protocol provides a public secret for three participants to read and modify data.

This paper[9] “Colour tracking technique by using pixy CMUcam5 for wheelchair luggage follower” The proposed method is used for Wheelchair follower which uses a color tracking system. Pixy CMUcam5 sensor is used for color detection and Arduino MEGA is the controller for input and output data. Servo motor acts as a director of the front wheel while the ultrasonic sensor is used to avoid collision and transaxle motor is performed through the motor driver.

This paper[10] “Towards smart wearable real-time airport luggage tracking” consists of a innovative system for luggage tracking using the android application and smartwatch. This software is used to detect the advent of luggage. We also developed a Smart power Management model which can recharge the tag.

VII. RESULTS AND DISCUSSION



Fig-4 : Android Application



Fig-5 : Google Map



Fig-6 : IOT Cloud Login

LogID	DATA	Logdate	LogTime	Action
1	Unauthorized_1105561_8021182/Unauthorized_1105561_8021182/Unauthorized_1105561_8021182	01/08/2020	16:34:44	ShowMap
2	Unauthorized_111107_801135	01/08/2020	16:35:13	ShowMap
5	Luggage2	01/08/2020	16:35:37	ShowMap
6	Luggage2	01/08/2020	16:35:44	ShowMap
7	Luggage2	01/08/2020	16:35:51	ShowMap
10	Unauthorized_111107_801135	01/08/2020	16:36:31	ShowMap
11	Unauthorized_111107_801135	01/08/2020	16:36:38	ShowMap
47	Unauthorized_111107_801135	01/08/2020	17:11:39	ShowMap
48	Unauthorized_111107_801135	01/08/2020	17:11:45	ShowMap
55	Unauthorized_111107_801135	01/08/2020	17:19:13	ShowMap

Fig-7 : IOT Cloud Database

VIII. CONCLUSION

This project is implemented to locate the missing or stolen bag. Here we tried to solve people’s problems by introducing a GPS module to track the location of the bag through application software and a fingerprint sensor is used to secure the bag. And an RFID-tag is used to provide a unique identity that stores all the data to the cloud server. The main advantage is that it consumes less time and provides real-time tracking results with high security. Thus Smart Bag makes a person’s life easier and smoother.

IX. REFERENCES

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