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Smart Luggage Carrier

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ABSTRACT: This paper, outlines the development and innovation of a 3-in-1 luggage carrier. It highlights the GPS (Global Positioning System) tracker, Auto-drive and manual drive. This paper was designed and made for the goods carriers to be reliable while transporting or during any occasion where we carry our luggage. While providing convenience to the goods carriers, the prototype also features a security of the luggage through proximity details. The GPS device is used to track the luggage carrier. The application helps in communication between the user and the carrier and controls the carrier manually.

1. INTRODUCTION

Bags have always been an integral part of travel life whether it is a travel bag or a plastic bag or even a luggage bag. Every bag has its own importance and carries different functions and utility. Dragging the luggage all over the place has been done since the golden ages. Thinking of a luggage which tracks its location, which follows the user automatically or manually, by the touch of the present technology to the old baggage it may bring out its true potential. This has motivated us to do the research all along so that it is user-friendly, eco-friendly and could be operated by a Smartphone. This paper, outlines the development and innovation of a 3-in-1 luggage carrier. It highlights the GPS (Global Positioning System) tracker, Auto-drive and manual drive. As per our research, we have developed and designed a goods carriers to be reliable while transporting or during any occasion where we use luggage carriers and also helps them go green. The GPS device is used to track the luggage carrier. It also can follow the owner and ease of interaction. Auto-drive and manual-drive option is given so that the user can choose any one option depending or the situation. For example, in case of the situations where there might be heavy traffic and hence there are lot of obstacles, the user can manually drive the carrier.

2. PROPOSED SYSTEM

There are a lot of applications to the luggage but all of them are not controlled from the luggage instead the commands are sent from the mobile phone to the luggage via Machine to machine communication. The mobile phone has a pre-installed application software with a pre-installed set of instructions. They wait for the user to send the commands. After the microcontroller embedded inside the luggage receives instruction from the user it acts accordingly. This can either be for tracking its location and send it to the user or send the luggage weight also the charge of the batteries.

3. LITERATURE SURVEY

3.1 Smart Bag using Solar and RFID Technology

In this paper they have used method used here is solar cell and Radio Frequency Identification (RFID). The solar cell is attached to the front part of the bag, it charges the rechargeable battery. Using which the phones can be charged. It has a Liquid Crystalized Display (LCD) display, which displays the timetable for the users. It has an alert system, which tells the user if any additional books are kept in the bag. Tracking using Radio Frequency Identification (RFID) is very tedious job hence not preferred. It is mainly useful for day scholars of schools and colleges. As the bag is connected to a Bluetooth module it is not widely used. The advantages are useful for tracking the people who are kidnapped, it also has an alert system. The disadvantage is solar cells won't be useful all the time.

3.2 Luggage Tracking System using IOT

The method used here is a Global Positioning System (GPS) module, alarm and an Arduino board to which all other components are connected. A map is created and is synchronized, to track the location of the bag if lost. The alarm notifies the user that the bad has passed beyond the range of its owner. The advantage is the alarm would help the owner of the bag to identify the bag and track it down. The disadvantage is that the bags cannot be tracked if it goes beyond the map area fed into the server. As Arduino is used so it is difficult to interact with an application. As it uses Arduino so it will be very ridged system that is, it is not easily upgradable

3.3 Multifunctional Bag Monitoring System

The proposed method, uses an android based remote bag system, which will provide elective, real-time bag location. Using which the bag can be tracked down easily. The advantage here is the bag can located, if it is lost, as it sends a message to the owner about its location. As the Global System for Mobile Communication (GSM) module is in this system so it is independent. The disadvantage is that if there is any problem with the satellite connections, then it won't be easier to track the bag. It is too expensive due to the usage of satellite communication. As Short Message Service (SMS) is used for interaction so it will be one way communication.

3.4 Smart Travelling Bag using IOT

In this paper Raspberry Pi 3 is used as microprocessor. It has antitheft sensors. The bag uses local host to communicate with the mobile application. It communicates with the webpage. It is independent as it has an inbuilt Global System for Mobile Communication (GSM) module. It even has an inbuilt power supply using the power-banks. The antitheft sensors detects whether the bag is open or closed so as to give an alert to the owner. It has a web application which connected to the bag through the Wi-Fi module.

3.5 Improved Baggage Tracking, Security and Customer Service with RFID in Airline Industry

In this paper the Radio Frequency Identification (RFID) is used for identification of the Baggage and the Customers. The Radio Frequency Identification (RFID) is attached as tags on luggage and in the tickets of passengers. The Radio Frequency Identification (RFID) readers keep track of the luggage of the customers. It has three level of testing here, they are unit testing for giving an error-free system, system testing is used to check whether the work is compatible and is harmonious to each other and acceptance testing is the final testing process and is then suggested for the users and stakeholders. It can be implemented only in the airports. It can be implemented for all destinations in the airlines network.

3.6 Smart Bag with Theft Prevention and real-time Tracking (with ultrasonic sensors and IR sensors)

This paper consists of Global System for Mobile Communication (GSM) and Global Positioning System (GPS), which are used for Tracking of smart bag. It has a fingerprint locking System. Ultra-Sonic sensors are used to detect the objects, such that the bags do not collide with it. The bag has two IR sensors, which is used to follow the owner, that is human detection is possible here. The distance detection is done using Bluetooth. All the sensors and hardware is embedded in the luggage itself. It does not have any web applications. If the range of the Bluetooth is lost, then it is difficult to detect the bag.

3.7 Smart Bag (it can follow you)

The method used in this paper is ultrasonic sensors, Global Positioning System (GPS), Global System for Mobile Communication (GSM), Bluetooth module, mobile application and power bank. It even has a fingerprint locking system. It does not have a theft protection system. It has a Bluetooth module which is connected to the user phone and the bag. Power bank is provided to charge up their respective gadgets. Due to the usage of only ultrasonic sensors there is no guarantee that the bag will follow the owner only. It may even follow another human too. Global System for Mobile Communication (GSM) and GPS are to get the location of the bag if it is lost, but within the Bluetooth range only.

3.8 Automated Luggage Carrying System

In this paper the methods used are Radio Frequency Identification (RFID), smart cards, synchronous rotation of motors and ultrasonic sensors. It has locomotion function that is, the wheels can move forward, backward, if three wheels rotate right the other three wheels rotate left and vice versa. The smart card includes an embedded integrated circuit that is either a microcontroller or a memory chip. Due to the presence of ultrasonic sensors the bag can detect the obstacles. It does not have a mobile application. RFID for long distance if costly and if the short range Radio Frequency Identification (RFID) is used, finding the bag will be tedious work.

4. WORKING

Figure 4.1 shows the system architecture of Smart Luggage Carrier. We have provided a mobile application to operate the bot. The communication between the mobile app and the bot is done using TCP/IP protocol. The user can select the favourable option from the interface provided in the mobile app. The different options are automated following that is the bot will follow the user automatically, manual following that is the user can manually operate the bot and GPS. The module will wait for the input and act accordingly. Based on the choice selected, the automatic module or the manual module or GPS module will start. And the Module will either follow or execute the command.

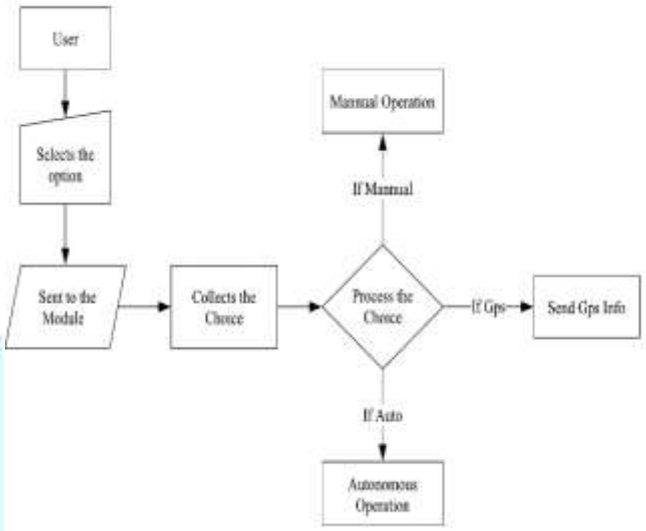

Figure 4.1: System Architecture of Smart Luggage Carrier

The ultra sound sensor (middle) and the two IR sensors (one at the right end and other at the left end) that are fixed on the side of the carrier that is faced towards the user are used to detect obstacles and the distance between the user or the obstacle and the carrier. When an obstacle is found the module checks for the position of the obstacle and the carrier moves accordingly to the left or right side. The 2 IR sensors attached to the right and left corners of the carrier help in doing so. If the IR sensor at the right detects an obstacle and there is no obstacle on the left side then the carrier turns right and this procedure is repeated until the user reaches his destination. The user can check the location of the carrier in the mobile application anytime, hence in case where the luggage carrier is lost, the user can find it easily.

CONCLUSION

The progress in science & technology is a non-stop process. New things and new technology are being invented. As the technology grows day by day, we can imagine about the future in which thing we may occupy every place. The proposed system highlights the GPS (Global Positioning System) tracker, Auto-drive and manual drive. As per our research, we have developed and designed goods carriers to be reliable while transporting or during any occasion where we carry our luggage. While providing convenience to the goods carriers, the prototype also features a security of the luggage through proximity details. The GPS device is used to track the luggage carrier. The application helps in communication between the user and the carrier and controls the carrier manually. Though this research is done keeping the small scale industries in mind, in the future this luggage carrier can be developed for large sale industries too. We could send notifications to the user through the app if the carrier has lost track of the user.

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