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Abstract



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Abstract:The number of passengers has increased by 5 percent last few decades also the loss or mishandling of luggage in airports has also been increased by 10 percent, thereby tr... **View more**

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Abstract:

The number of passengers has increased by 5 percent last few decades also the loss or mishandling of luggage in airports has also been increased by 10 percent, thereby tremendously raising its associated costs. The RFID based tracker does not constantly monitors or detects possible errors in a timely manner. There are a variety of gadgets in the market but all have some issues such as energy consumption, position, portability, etc. The current research provides a

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novel idea to track the luggage in real time with the help of a microcontroller system and GSM module, which will be placed inside the luggage. Using wireless communication techniques the proposed paper has been designed. In the real world application, an airline employee enters a passenger's information into the system database which is connected to the device and then it will associate the device to a module. Whenever the luggage is in motion, the device navigates the luggage according to its position. The proposed system focuses on increasing the monitoring details when compared to current monitoring systems because it allows the individual tracking of luggage. Power consumption with the inclusion of accelerometer, the proposed idea therefore consumes less power.

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I. Introduction

With increase in misplacing of luggage, this system is initiative for this problem. GPS includes a community of 24 satellites in six special 12-hour orbital paths spaced in order that as a minimum 5 are in view from each point on the globe. Today, GPS has a huge range of other packages together with tracking bundle shipping, cell commerce, emergency reaction, exploration, surveying, law enforcement, activity, flora and fauna tracking, seek and rescue, roadside assistance, stolen vehicle recuperation, satellite statistics processing, and business management. CELLPHONES become more ubiquitous in our daily lives, the need for context-aware applications increases. One of the main context information is area, which allows a extensive set of cell-smart-phone applications which includes navigation, region-conscious social networking, and protection. Automatic vehicle tracking (AVL) is a system that provides the tracking of vehicle. Location Based Service (LBS), Navigation and Intelligent Transportation are the new studies subjects now.

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Real Time Airport Luggage Tracking System

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Abstract— The number of passengers has increased by 5 percent last few decades also the loss or mishandling of luggage in airports has also been increased by 10 percent, thereby tremendously raising its associated costs. The RFID based tracker does not constantly monitors or detects possible errors in a timely manner. There are a variety of gadgets in the market but all have some issues such as energy consumption, position, portability, etc. The current research provides a novel idea to track the luggage in real time with the help of a microcontroller system and GSM module, which will be placed inside the luggage. Using wireless communication techniques the proposed paper has been designed. In the real world application, an airline employee enters a passenger's information into the system database which is connected to the device and then it will associate the device to a module. Whenever the luggage is in motion, the device navigates the luggage according to its position. The proposed system focuses on increasing the monitoring details when compared to current monitoring systems because it allows the individual tracking of luggage. Power consumption with the inclusion of accelerometer, the proposed idea therefore consumes less power.

Keywords— GSM, GPS, LUGGAGE TRACKING SYSTEM, TRACKING, LOCATION.

I. INTRODUCTION

With increase in misplacing of luggage, this system is initiative for this problem. GPS includes a community of 24 satellites in six special 12-hour orbital paths spaced in order that as a minimum 5 are in view from each point on the globe. Today, GPS has a huge range of other packages together with tracking bundle shipping, cell commerce, emergency reaction, exploration, surveying, law enforcement, activity, flora and fauna tracking, seek and rescue, roadside assistance, stolen vehicle recuperation, satellite statistics processing, and useful resource management. CELLPHONES become more ubiquitous in our daily lives, the need for context-aware applications increases. One of the main context information is area, which allows a extensive set of cell-smart-phone applications which includes navigation, region-conscious social networking, and protection. Automatic vehicle tracking (AVL) is a system that provides the tracking of vehicle. Location Based Service (LBS), Navigation and Intelligent Transportation are the new studies subjects now.

In system is ARDUINO processor based. In which we have ARDUINO processor, GSM module and GPS module. The working procedure of this device is that it has been kept in the luggage through which user can get live location of luggage. Location id send to server and server will send it to android app in his phone regarding the location of the luggage and sends the location via SMS or message on the android application. Thus user can and their luggage. So a cost effective system is introduced here by using GSM and GPS, which tracks luggage.

Further the paper is divided in to sections. Section II represents Literature Survey, section III represents Hardware Description, section IV represents Requirement Analysis, section V represents Proposed system, section VI represents Proposed system architecture, section VII represents Result And Analysis, section VIII represents Conclusion, section IX represents Reference.

II. LITERATURE SURVEY

Automated Luggage Tracking System [1]:

This paper implements Radio-Frequency Identification (RFID) to read the tag on a piece of luggage as it is being loaded onto a plane. In the real world application, an airline employee enters a passenger's information into the system and then he will associate it to a unique tag. Each time a luggage with the label goes through a RFID scanner, the area status in the aircraft database will be refreshed for following.

Drawbacks:

This project was designed with a low frequency (LF) RFID reader, limiting the range and type of the ID tags.

Advantages:

This project helps wastage of time and let people and their luggage easily.

Towards Smart Wearable Real-time Airport Luggage Tracking [2]:

This paper proposes a smart system for real-time tracking of airport luggage using mobile applications and smart-watches. Tracking is done using Kalman-filtered Wi-Fi fingerprints collected by active tags. Information about the flights and association with different luggage pieces is inputted pre-flight

using QR codes.

Drawbacks:

QR code may get damage. Power consumption is more. Wireless network is used so if luggage is out of range then it will affect on data.

Advantages:

The Bracelet involves passenger's information in to it.

Airport luggage tracking system using RFID technology [3] :

In this project RFID tags is implemented for luggage tracking system .The main aim of this paper is to trace and check the luggage and inform about the status of the luggage at every stage

The tracking is done through RFID scanners and then provides information of the luggage to passengers through GSM module and GPS module

Drawbacks:

The tracking system is costlier and there is a chance of the RFID tags getting damage as they are delicate.

It does not involve passenger's information in to it.

Advantages:

IT monitors the movement of luggage at every security stage.

FPGA Based Luggage Tracking system in Airport [4] :

In this project RFID-based bracelet is implemented for luggage tracking system. Where firstly, the basic operation of RF (ACTIVE) reader and design of authenticated person accessing system will be studied and later metal detector system is developed, and a alert system using GSM system by sending luggage whole information up-to date is designed.

Drawbacks:

The bracelet may get damage and data can be lost.

Costly due to use of FPGA controller and the delicate and bulky product to wear.

Advantages:

It contains automatic update of Check-ins and Check-outs information.

Design and Optimization of Luggage Tracking System on Airport [5] :

In this paper baggage following framework has no RFID. The system uses GPS and GSM module which helps to detect the location of the luggage and it contains a web server to know about the location of luggage and GSM module helps for sending messages. The system improves passenger security as well as reduces delay.

Drawbacks:

It does not stores the information of the passengers

Advantages:

It sends the location of the luggage by sending co-ordinates through messages.

It improves luggage security.

To avoid these limitations in our proposed idea we are trying to take multiple finger scans.

III. HARDWARE DESCRIPTION

Fig. 1. Shows the ARDUINO UNO Controller.

ARDUINO is an instrument for seeming well and good and

control a greater amount of the physical world than your desktop PC. It's an open-source physical figuring stage in view of a basic microcontroller board, and an advancement domain for composing programming for the board.

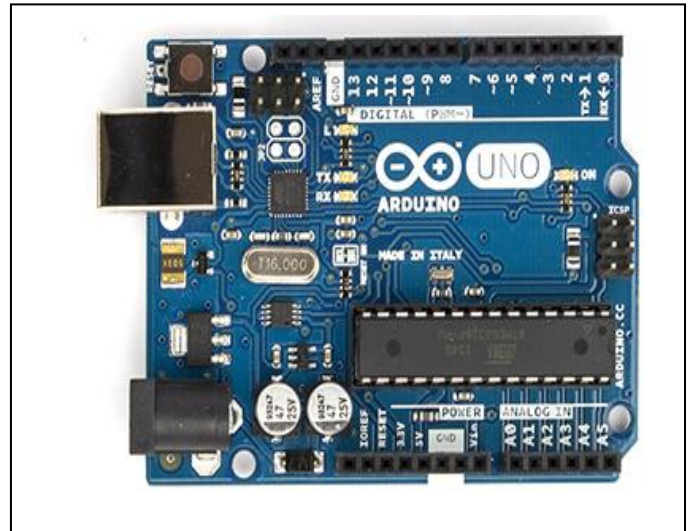


Fig. 1. ARDUINO UNO Controller. [9]

Fig. 2. Shows GSM Module.

The GSM SIM 900 module is used to send text message to the user and it is also used to communicate with the users mobile.

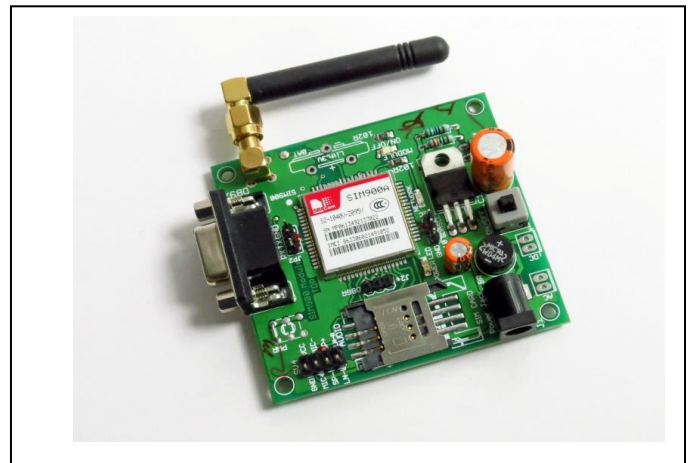


Fig. 2. GSM SIM 900. [10]

Fig. 3. Shows the GPS Module.

In this paper the G.P.S receiver continuously sends data and the microcontroller receives the data whenever it requires. The data sent by the G.P.S is a string of characters which should be decoded to the standard format. This is done by the program which we implement in the controller. The GPS module is used to get the co-ordinates of the luggage.



Fig. 3. GPS Module. [11]

IV. REQUIREMENT ANALYSIS

- Hardware Requirement:

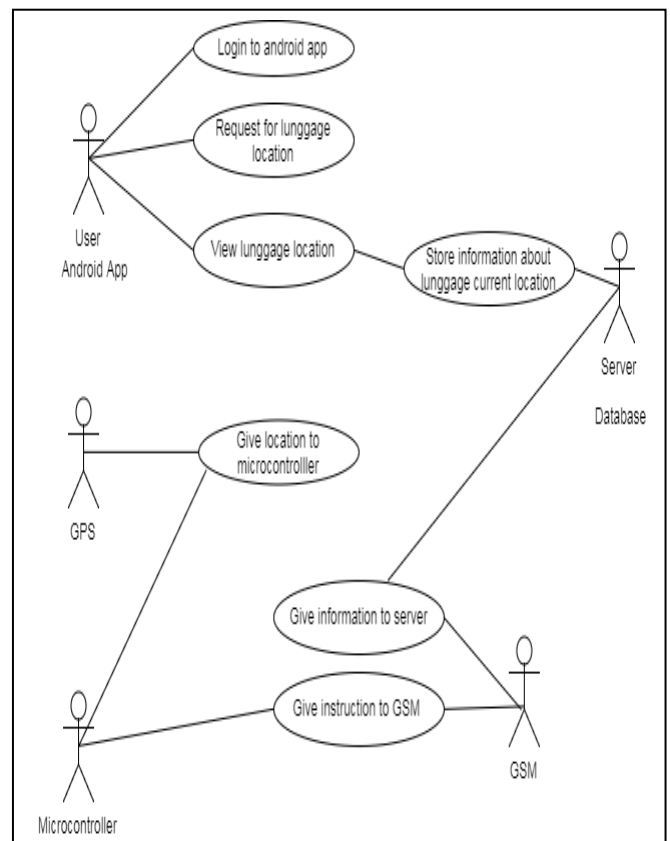
- 1.Arduino UNO- ATMEGA 328
- 2.GSM module - SIM900
- 3.GPS module
- 4.Battery -9V

- Software Requirement

- 1.ARDUIINO IDE- ARDUINO programming
- 2.B4A - Basic 4 Android - Android programming
- 3.Server side- HTML

V. PROPOSED SYSTEM

The system comprises of a luggage tracking device which contains a small hardware circuitry which is used to track the live location of a luggage. This circuitry consists of ARDUINO UNO, GSM and GPS module which will give the location of luggage. The GSM module and GPS module will be interfaced with ARDUINO UNO. Through GPS we will send GPRS which contains live location to server which is present at PC side. The server will send location to Android app of user. In that android app user will get live location of luggage. The working procedure of this device is that it has been kept in the luggage through which user can get live location of luggage. Location id send to server and server will send it to android app in his phone regarding their location and sends the location via SMS or message on the android application which is then used to view the location in the map. Thus user can find their luggage. So a cost effective system is introduced here by using GSM and GPS, which tracks luggage.



The fig. 4. Shows the use-case diagram for the real time luggage tracking system.

Fig. 4. Use Case Diagram for the system.

FEATURES:-

The features of the paper are as follows:

- ARDUINO Controller UNO
- GSM Module
- GPS Module
- PC side server
- Android Application for user
- Single Luggage

VI. PROPOSED SYSTEM ARCHITECTURE

Fig. 5. Represents the system Block diagram. The system includes a GPS module, GSM module, Power supply, ARDUINO UNO, P.C. side server and an Android application.

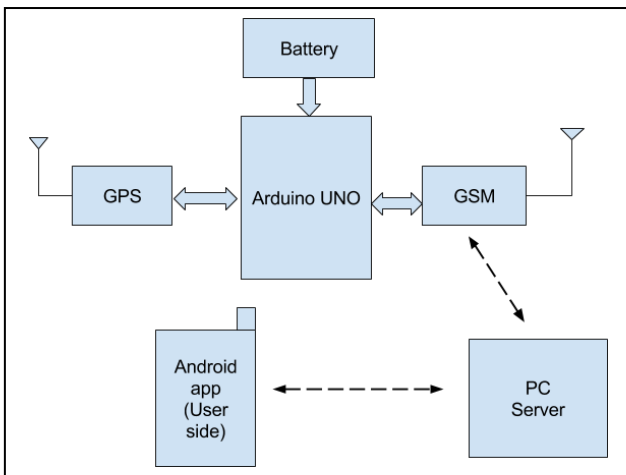


Fig. 5. System Architecture.

VII. RESULT AND ANALYSIS

We have developed a module which includes connection of the GSM module to the ARDUINO. The GSM module is used to send message to the mobile phones. The messages are sent through AT commands. All these commands are run and compiled in software called PUTTY which is a terminal. While doing a particular task there should be at least a gap of 10 sec.

In the below fig. 6., the commands are used in putty for sending message.

```

C:\Users\shay\>
AT
AT
OK
OK
AT+CMGF=1
AT+CMGF=1
OK
AT+CMGS="+919978043362"
AT+CMGS="+919978043362"
> HEL
HEL
> "E
"OKMS: 120
OK
RING
RING
NO CARRIER
RING
RING
RING
RING
RING
NO CARRIER
|

```

Fig. 6. AT commands for sending message.

In the below fig.[7], The coding for ARDUINO is done in a software called ARDUINO IDE. The code consists of the read write functions of ARDUINO and it consists of the Baud rate and the time interval in which message should be send

```

FILETYDNGWV9S
//SERIAL CODE
#include <SoftwareSerial.h> // HEADER FILE for creating own serial port
//SERIAL CODE
SoftwareSerial mySerial(9, 10); // define rx and tx pin

void setup()
{
  mySerial.begin(9600); // Setting the baud rate of GSM Module
  Serial.begin(9600); // Setting the baud rate of Serial Monitor (Arduino)
  delay(1000);

  mySerial.println("HI-CHEF!"); //Set the GSM Module in Text Mode
  delay(1000); // Delay of 1000 milli seconds or 1 second
  mySerial.println("HI-CHEF="+919967377639+"!"); // Replace n with mobile number
  delay(100);
  mySerial.println("Hi , Aal !!!");// The SMS text you want to send
  delay(100);
  mySerial.println(char(24)); // ASCII code of CTRL+G
  delay(100);
}

void loop()
{
  /* if (Serial.available()>0)
  {
    switch(Serial.read())
    {
      case 'n':
        mySerial.println("n");
        break;
    }
  }
  */
}

```

Fig. 7. Commands for ARDUINO.

In the below fig. 8., The GSM module is connected on pin number 9 and 10. Whenever the button in the ARDUINO is pressed it sends a message from the sim-card used.

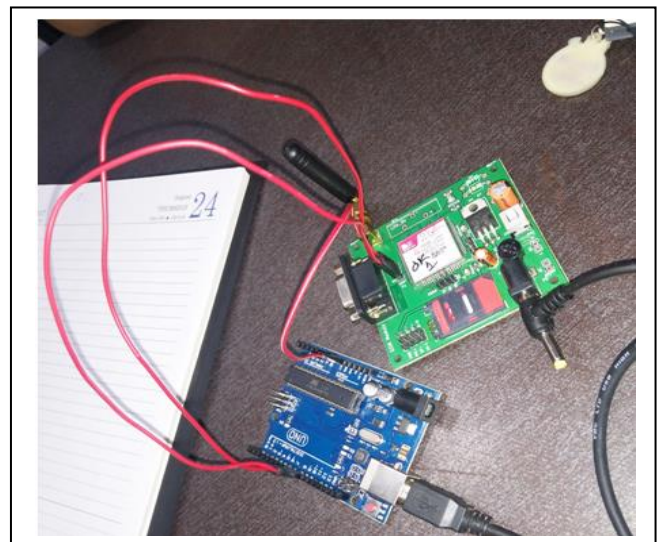


Fig. 8. Connection of GSM module with ARDUINO-UNO.

In the below fig. 9. ,This helps to communicate with the mobile and send passengers, the message about their location.

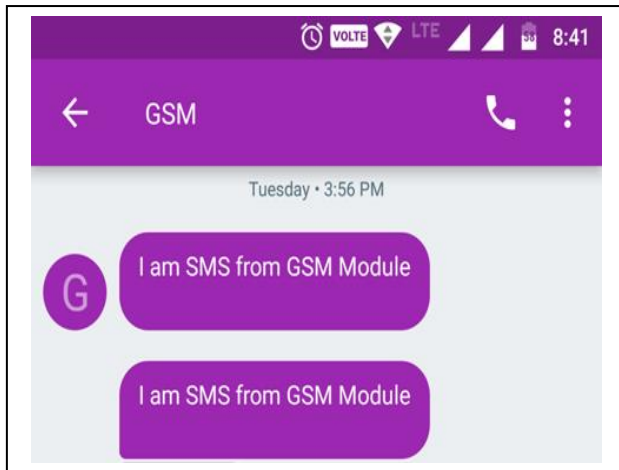


Fig. 9. Message from GSM Module.

In the above tests connection for GSM module with the Arduino Uno and getting messages from this is shown further connecting it with GPS module would result in getting the co-ordinates i.e. longitude and latitude of the luggage. This would be connected with an Android application which helps to trace the location according to the co-ordinates.

VIII. CONCLUSION

In this project, an efficient controller-based luggage tracking system was proposed. A number of technologies have been implemented to speed these processes but one technology that has the potential to revolutionize luggage handling technique is controller-based technique. This machine enables us to discover the bags in real-time with the help of persons cell. The user can locate their luggage from anywhere from the world. The gadget presents huge improvement in communication between person and luggage. This will improve security and satisfaction caused by mishandled luggage.

IX. FUTURE SCOPE

The next module consists of implementation of the android application, web server and connection of GPS module to the system .This would help the passenger to track the location of the luggage. The GPS module would send co-ordinates [Latitude and Longitude] through which the passenger can

easily track the location of the luggage. The android application is used to help the passengers to locate the luggage on map. The server would help to store the information of the passenger and keep a track of the luggage. This can be used for finding the luggage in various transport areas such as Airport, Shipping companies and it can also be used to trace the location of the vehicle.

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