

DECLARATION

I hereby, declared this report entitled “DEVELOPMENT OF SAFE TRAVEL LUGGAGE SYSTEM”
is the results of my own research except as cited in references.

Signature :.....

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Date : 11.01.2016

APPROVAL

This report is submitted to the Faculty of Engineering Technology of UTeM as a partial fulfillment of the requirements for the degree of Bachelor of Electrical Engineering Technology (Industrial Automation & Robotics) with Hons. The member of the supervisory is as follow:

.....
(Suziana Binti Ahmad)

ABSTRACT

In this era, a lot of peoples travel around the world every day and most of them uses luggage to carry their belongings. But humans are often making mistakes. The mishandling of luggage by the travellers or the airport management is quite common. So, this project is about a device that can locate the luggage around the world via smart phone with additional luggage security and digital weight scale for the travellers convenience to travel. In this project, a new luggage system is presented. The luggage can be located anywhere around the world. It uses GPS-GSM system to locate the luggage. Moreover, the luggage is equipped with a wireless locking system that only can be unlocked by its rightful owner. A simple Bluetooth connection is used for this wireless locking system. In addition, this luggage will also can weigh its own weight so that travellers can estimate their luggage weight. And the best part is this luggage system can be control and monitored via smartphone.

DEDICATION

To Allah SWT
To my beloved parents
To my kind lecturers
And not forgetting to all friends
For their
Love, Sacrifice, Encouragement, and Best Wishes

ACKNOWLEDGEMENT

In completing this project, I have received a lot of helps from my supervisor, lecturers, researchers and family members and fellow friends.

Firstly, I want to give my upmost thanks to my supervisor, Miss Suziana Binti Ahmad who gave me an opportunity to do this project for guiding and assisting me through the completion of this project. Without her guidance and persistent help, this project would not have been successful.

I would like to express deepest appreciation to my parents in supporting me mentally and financially, for their encouragements and supports.

Secondly, it is also my duty to record my thankfulness to my fellow friends that gave advice at some points and lent me a hand in completing the project. Also to a friend that offered this private space for field test and analysis of the prototype.

Finally, I also take this opportunity, my sense of gratitude to one and all that, directly or indirectly have helped me in this project.

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CHAPTER 1

INTRODUCTION

Some sort of GPS pursuing model is usually a system of which utilizes the particular Global Positioning System to look for the exact position of an car or truck, person, as well as various other advantage for you to which in turn it really is connected and to report the career with the advantage with normal intervals. The particular recorded position facts is usually saved inside pursuing model, as well as it might be transmitted to some middle position facts foundation, as well as internet-connected personal computer, utilizing a cellular (GSM as well as SMS), radio stations, as well as satellite television modem stuck inside the model. This will give the particular asset's position being available in opposition to the road history sometimes in real time as well as whenever studying the particular observe afterwards, using GPS pursuing computer software. Information pursuing computer software can be obtained intended for intelligent mobile phones along with GPS functionality. Within various other hands, wireless is usually a instant technology common intended for interchanging facts around short ranges from repaired and cellular devices, and building personalized spot sites (PANs). It can connect many units, defeating complications involving synchronization.

1.1 Background

GPS is one of the technologies that are commonly used in several applications nowadays. One example of it is tracking a vehicle or other assets and keeps regular monitoring on it. But, in this case GPS will be used in tracking luggage. This tracking system can transmit the data of its location and travel data and it can be view from any other mobile locations. This system enables us to track target in any weather conditions that uses GPS and GSM technologies. There are wireless GPS module on the luggage to identify its initial position and to be transmit via GSM with new parameters consist by the luggage data port.

1.2 Problem Statement

Those who take a trip usually are possibility associated with sacrificing their luggage. Commonly for the international airport whenever to merely get their luggage for the luggage software. These kinds of issues are verified with most of the international airport. Subsequently, nearly all luggages have the trouble associated with safety measures in the luggage. It can be very easily opened by anyone. Common luggage additionally can't diagnose this weight in the information which has been vital that you these travellers before boarding to stop further luggage weight demand.

1.3 Objectives of the project are ;

- i. Study the development of safe travel luggage system.
- ii. To develop tracking, wireless locking and weight system for a luggage.
- iii. Construct and build a safe travel luggage system.

1.4 Work Scopes

A project involves several parts including:

i. GPS

GPS, its means Global Positioning System, uses a radio freq navigation system that gives land, sea and airborne users to determine their current location that can be use anytime and anywhere around the world.

ii. GSM

GSM (Global System for Mobile communication) is really a digital portable telephone process. GSM works on the alternative of time split several accessibility which is the particular most favoured in the a few digital Wi-Fi telephone technological know-how (TDMA, GSM, in addition to CDMA). GSM digitizes in addition to compresses facts, after that directs that straight down any station together with 2 other water ways connected with end user facts, each and every inside a time period slot machine game. It works from possibly the particular nine hundred MHz or perhaps 1800 MHz volume music group.

iii. Arduino Mega Microcontroller

Arduino is use to make a device that can control and sense any analog or digital parameters in this world. It is an open-source physical processing system according to a simple microcontroller table, and also a progress atmosphere with regard to composing application for the table.

iv. 1Sheeld

Basically, 1Sheeld includes 2 components. The primary element can be a defend that is certainly physically connected to your Arduino panel and serves to be a cellular middle-man, pipes information between Arduino and virtually any Android mobile phone by using Bluetooth. The other element can be a software program podium and iPhone app on Android cell phones that will is able to this transmission between our defend as well as your mobile phone and let your select from diverse obtainable glasses.

v. MAX 232

The MAX232 is usually a double driver/receiver and commonly converts your RX, TEXAS, CTS and RTS impulses. The motorists present RS-232 voltage level outputs (approx. ± 7.5 V) from a supply +5v offer by using on-chip fee pumping systems and additional capacitors.

vi. Bluetooth Module

Bluetooth Modules is usually a common technology that been used to control preferences that are wireless but in short range such as phone, remote control, home security, machines and robots. In this case Bluetooth module is the best to be used for connecting the luggage and the smart phone.

vii. Luggage Scale

A luggage scale also called suitcase scale is used to weigh luggage before going to an airport to avoid luggage being overweight.

CHAPTER 2

LITERATURE REVIEW AND PROJECT BACKGROUND

This section shows that the research has been done. In this chapter, the review is on wireless data communication, Global positioning system, Bluetooth locking system, luggage scale. Below are explanations about the previous study that they done.

2.1 Wireless Data Communication

Remote distance learning is the alternate connected with facts among some focuses which are not linked by an electric conductor. The standard remote advances use airwaves. Having airwaves dunes separations may be small, one example is, a couple yards intended for TELEVISION SET as well as to your scope 1000's or possibly countless number of kilometres intended for serious space airwaves interchanges. It offers different sorts connected with transformed, easily transportable, and sleek and stylish software, which includes two-way radios, mobile devices, personal computerized lovers (PDAs), and remote methods administration. There are types of facts distance learning, one example is, WPAN, WLAN and RF transmitter and collectors.

2.1.1 GSM Modem

The centre of information correspondence about this framework lies in remote correspondence control terminals that use GSM Modules to exchange long-remove information broadly and dependably. It supports guidelines of AT summons. SIM300 can be incorporated with an extensive variety of uses. SIM300 is a Tri-band GSM/GPRS motor that deals with

frequencies EGSM 900 MHz, DCS 1800 MHz and PCS1900 MHz SIM300 gives GPRS multi-opening class 10 capacities and backing the GPRS coding plans CS-1, CS-2, CS-3 and CS- 4. With a minor arrangement of 40mm x 33mm x 2.85 mm, SIM300 can fit all the space prerequisite in our application. Subsequently, the MCU can associate with GSM modules conveniently through serial interfaces. (Abid khan RaviMishra, 2012)



Figure 2.1 Shows a GSM Modem

2.1.2 Bluetooth

Bluetooth is really a lately planned standard for just a small selection, low strength wireless verbal exchanges. To begin with, it really is being envisioned merely like a insert replacement technology Their almost all often shown software is usually that of the "cordless PC" comprising of the handful of gizmos which includes the personal computers, pill, unit, mouse, joystick, printer's, etc., every equipped having a Bluetooth credit card(AanchalChanana et al, 2012).



Figure 2.2 Shows a Bluetooth Module

2.1.3 Radio Frequency Identification (RFID)

RFID, Radio Frequency Identification is definitely an essential along with simple innovation in which allows remote control info transmission. This specific innovation is not often utilised in sector due to absence of institutionalization one of several putting together companies earlier. RFID improvements are effective along with protected distinction with various other systems. Together with RFID, remote control made ID takes a particular construction: this article, location, or perhaps individual is usually rubber-stamped having a outstanding identifier program code contained having a RFID tag, and that is for some reason appended in order to or perhaps implanted within the aim. RFID is just not a new sole merchandise but alternatively a complete construction, an average RFID construction include several fundamental factors: RFID tag (transponder), every end user (handset) along with back-end software construction (or database), that asks the actual support from the computer system. The item is usually utilised pertaining to management, preventing, trade, operations along with keeping up record from the unique clientele (Gyanendra K VermaandPawanTripathi, 2010)

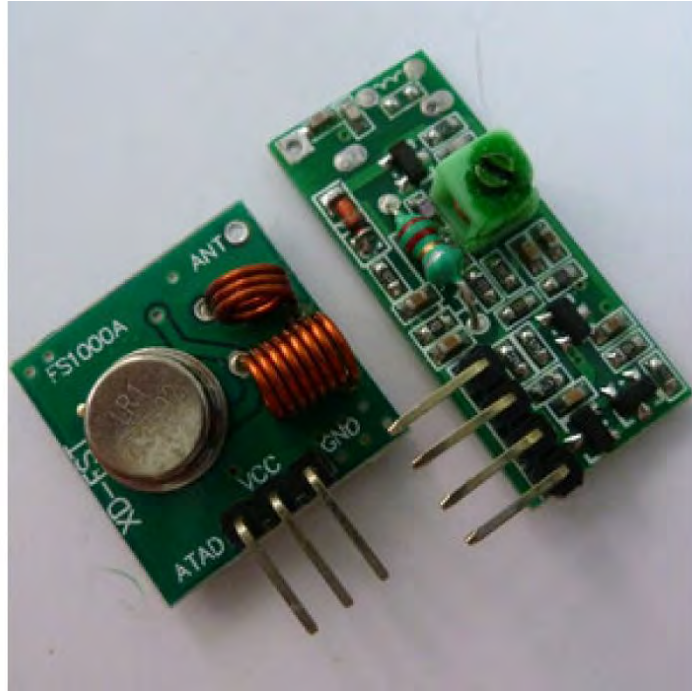


Figure 2.3 Shows a RF RX and TX

2.2 Global Positioning System (GPS)

The actual global positioning system (GPS) is often a space-based satellite tv on pc navi program that gives position and also time info in every conditions, anywhere about or even near the world wherever there exists an maximum brand of sight in order to a number of or maybe more GPS UNIT satellites. The machine supplies vital capabilities in order to armed service, city, and also business oriented consumers worldwide. America federal designed the device, retains it, and also causes it to become freely offered in order to having it a new GPS UNIT phone.

2.2.1 GPS Data Logger

Commonly, GPS information logger utilized from vehicle. This data logger determines a new mischance also trains the family and in addition problems amounts, for instance, this urgent situation car or truck as well as the law enforcement officials control on the issue that has a SMS which has the location. The particular progression involved may be the facts logger which in turn taking walks parallel towards black colour package in a very

jet. For that facts logger the item operate the OBD port that is available in every vehicle created write-up 1996 (Pooja Desai et al, 2014)

2.2.2 GPS Data Puller

Additional category of GPS checking products is the data pusher products. A lot of these products press information or mail information when the device reach a particular area or from certain intervals. These kinds of GPS products tend to be continually supervising their area and it also generally always upon. The majority of, or even just about all information puller device likewise allow information driving (the capacity to issue an establishment along with information from the GPS checking unit) (R.Venkatesh et al, 2013)

2.2.3 GPS Data Pusher

Data Pushers tend to be GPS unit following models which can be primarily used by safety measures functions. A new data pusher GPS unit following unit transmits data in the device with a middle repository from normal times, upgrading area, course, velocity as well as range. Data pushers are normal within fleet management to deal with vans as well as other autos. For instance, shipping autos could be positioned instantaneously as well as his or her progress could be tracked. Different makes use of contain a chance to course important possessions. If important things are increasingly being carried as well as long as they reside in a particular area, they might regularly be checked to avoid fraud. Data pushers may also be frequent pertaining to espionage kind responsibilities. It is very simple to observe these activities associated with a personal as well as important tool. This utilization of GPS unit following happens to be an important issue in neuro-scientific GPS unit following, for the likelihood of mistreatment.) (R.Venkatesh et al, 2013)

2.3 Wireless Locking System

Wireless locking mechanism is a defense idea regarding authenticated LAN or maybe WLAN community consumers presented through various vendors in numerous practical forms as well as bodily styles. In contrast to instant

recommendations, instant locking mechanism applies increased exposure of automatic locking rather than locking by simply time-out or maybe unlocking. Your instant locking idea can handle initialising the customer along with authentication as well as log-on as automated critical answers. Past that your instant locking mechanism can handle automatic log-off right after consumer actually leaves revealed community buyer as well as unbiased through time-out conditions. Security has influence, whilst built-in or maybe galvanically connected as well as used receiver/transceiver continues linked with protected buyer thing once instant expression obtains lost through buyer going above a set highest helped range, generally the handbook get to essential for running key pad attached with buyer.

2.3.1 Bluetooth Locking System

Bluetooth is often a based regarding details pertaining to typical short range rural software. Even though Bluetooth is often used for the item previously incorporates a great penetration in excessive consistency man to man software. Conventional Bluetooth is actually relationship driven. On the place each time a device is actually related, a connection is actually retained upward, regardless of possibility that there are no details internet. Sniff methods allow devices for you to rest, reducing strength consumption to supply many weeks regarding electric battery living. Maximum monitor current is commonly around 25mA. Although it continues to be individually shown to be lower strength when compared with other radio criteria, it can be however not low plenty of strength pertaining to coin tissue as well as power cropping software (Joe Decuir et al, 2010)

2.3.2 RFID Locking system

An advanced lock locking framework is likewise executed and create by RFID peruser which validate and approve the client and open the lock naturally. It likewise keeps the record of the client's development information. It's imperative to accept the client before going into a safe space and RFID give this arrangement. The framework empowers client to registration and registration under quick, secure and in extremely

advantageous conditions. The framework incorporate locking framework which open when the client put their tag in contact with peruser and the client data coordinated with the data officially put away in database. The RFID controls the opening and shutting of the lock (Gyanendra K Verma and Pawan Tripathi, 2010)



Figure 2.4 Shows RFID Module

2.3.3 Locking using SMS via GSM

This method are the last option to reduces cost on buying bluetooth module. By this method, orders are sent from users smartphone via SMS. Then Arduino will process the order receive that to unlock the back. The Arduino is set to unlock the lock by 10 seconds. Later, the lock will automatically lock the solenoid lock.

2.4 Microcontroller

A microcontroller is a minor PC on a solitary incorporated circuit containing a processor centre, memory, and programmable data/yield peripherals. Microcontrollers are utilized as a part of hence controlled items and gadgets, for example, auto motor control frameworks, implantable therapeutic gadgets, remote controls, office machines, apparatuses, force devices, toys and other installed frameworks. By decreasing the size and expense contrasted with a plan that uses a different memory, chip, and data/yield gadgets, microcontrollers make it practical to digitally control much more gadgets and procedures. Blended sign microcontrollers

are normal, incorporating simple segments expected to control non-advanced electronic frameworks.

2.4.1 Arduino Uno

Arduino Uno is a microcontroller board which comprises of 14 advanced data and yield sticks altogether and out of which six are utilized as Pulse Width Modulation yields; six are utilized as simple inputs, a force jack, a USB association, and a reset catch. Microcontroller is joined with a PC by the use of a USB link or can be fuelled by utilizing an AC-to-DC connector or a battery can be utilized to begin (V Vennishuthu et al, 2014)

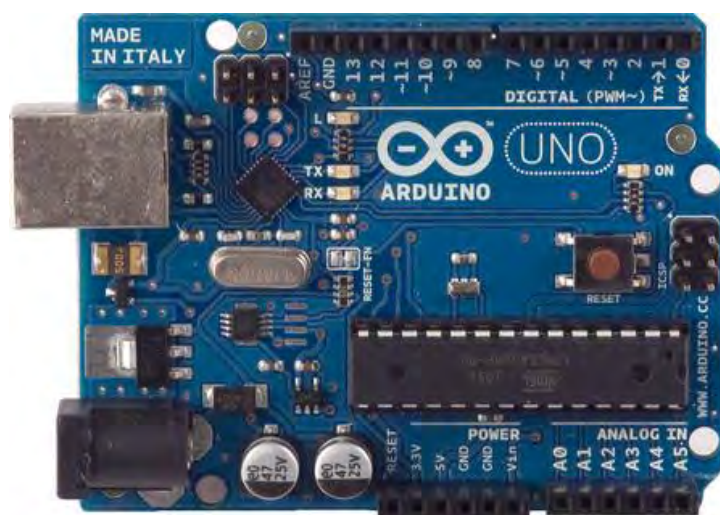


Figure 2.5 Shows an Arduino Uno

2.4.2 PIC Microcontroller

Taking into account the encounters with the IPS Board, there are a configuration for a multipurpose model board for PIC 18F's. Microchip offers an expansive scope of microcontroller (PIC's) for different applications. Microcontroller as shown in figure 2.6 is utilization to create and model arrangements it can get to be clumsy to outline distinctive prototyping sheets again and again depend on the controller utilized. So attempted to plan a

Universal PIC Board UPB where a wide scope of diverse controllers can be utilized (Rathod Raju Ambdas and R.P. Chaudhari, 2013)

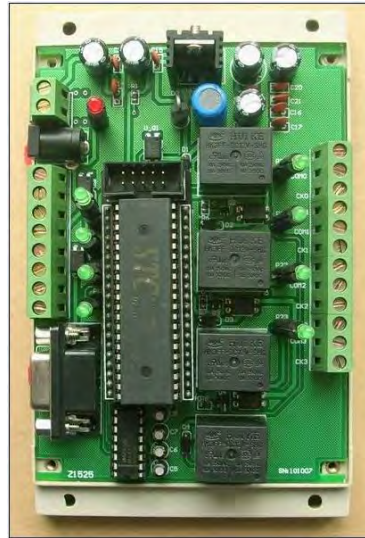


Figure 2.6 Shows a PIC Microcontroller

2.5 Digital Luggage Scale

A baggage scale as shown in figure 2.7 likewise called bag scale is accustomed to measuring gear before setting off to an airplane terminal to keep away from baggage being overweight. There are two sorts of baggage scale. Advanced and simple. The patterns to utilize computerized measuring machine rather than established weight framework is received basically on the planet thus the interest increments to outline mixture of cutting edge advanced measuring machine at aggressive level (S.A. Fagbemi, 2014)



Figure 2.7 Shows a Digital Luggage Scale

CHAPTER 3

PROJECT METHODOLOGY

3.1 Introduction

This chapter presents the implementation, description on the development methodology and procedures of the project in detail. Development of safe travel luggage system are discuss and being divided to several parts.