SMART WALLET
A Wallet which follows you

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Abstract- The Smart Wallet is the new trend in the market. Comparing this Smart wallet with the ordinary wallet which is available in the market, Smart wallet has many features. We all forget our wallet at public places or at railway station or airport. So by using this wallet we can overcome the disadvantages of the ordinary wallet. By using smart wallet we can trace the location of the wallet, click the pictures of the theft and many more. The smart wallet can do all the thing that the usual dumb wallet does, however it does include other features like mobile charging, anti-theft protection, etc. The smart wallet is always costlier than the regular bag, but it is mostly well-made and looks sleek along with some additional tech perk. So in this paper we propose a Smart wallet with features like notification to users, about loss of our wallet and location of our wallet.

Keywords – GPS module, GSM module, Camera module, Bluetooth module, Ardunio Duo Board.

I. INTRODUCTION

Many of us mostly forget our Wallet or sometimes become a victim of Wallet theft too. Losing Wallet is a very agonizing experience so we are introducing a Wallet that almost follows you. Smart Wallet is the modern day Wallet with GPS System attached in it. We just have to connect our smart phone with our Smart Wallet and track it through the app. The Smart Wallet will be working in two modes namely Normal mode and Lost mode. When we are away from the Wallet the Wallet enters into the lost mode. The creepiest feature is the built in camera which clicks the image of the person who opens it in the lost and this image is immediately sent on the Smartphone [3][4][5].

This is not an original idea, for the implementation of Smart Wallet, the idea has existed for two years ago, by Azat Tovmasyan when he lost his wallet and spent over a month getting his lost documents reissued. This is however an original plan for designing smart wallet with camera module, GSM-GPS module, Bluetooth module for transmission of data. This idea is implemented in Armenian. Similar kind of smart wallet by company Walli was implemented one year ago, this wallet consist of six card slots, long lasting battery, passport. In this wallet there is no hidden camera for taking a picture of theft. We have equipped the smart wallet with various features which detect the lost wallet. Despite looking classically beautiful, it really goes the extra mile. Hidden under the leather exterior is a built-in power bank that offers wireless charging. In addition, it uses its connection to the app on your Smartphone to know when to activate. In the proposed system the Wallet will be working in two modes namely Normal mode and Lost mode. When we are away from the Wallet the Wallet enters into the lost mode. The creepiest feature is the built in camera which clicks the image of the person who opens it in the lost and this image is immediately sent on the Smartphone [3][4][5].
III The Proposed System

In this section we describe about the block diagram of proposed system of Smart Wallet. Figure 1 shows the proposed system. Each Module of the system is described as follows.

3.1 Mobile unit (Smartphone)

This is the unit which is interfaced with the wallet with the help of Bluetooth Module. When the wallet enters in the lost mode the location of the wallet would be traced with help of this module. The images of the theft would be sent to this module. GSM and GPS module are going to communicate with smart wallet with the help of this unit[6].

3.2 Bluetooth Module

This module is basically used for Bluetooth Distance alarm system. At first we have to pair our wallet with our mobile unit with the help of this module. If the wallet goes beyond the distance of 10m then the alarm in the mobile unit will indicate that wallet has entered in lost mode. Bluetooth module HC05 is used in this system [7].

3.3 GSM and GPS Module

These modules are used for tracing the location of the wallet when it enters in lost mode. The GPS module traces the location of the wallet and sends the live coordinates of the wallet to mobile unit with help of GSM module. GSM 800 module and Tiny GPS Module is used in this system[8][9].

3.4 Camera Module

This module is used to take the pictures of the theft whenever the wallet is open. This opening mechanism of the camera is done with help of Magnetic switch. The pictures clicked are send to the users mobile unit using WIFI Module[10].

3.5 Processor Unit

This is the main unit of our Project. This unit controls the entire system of Smart wallet. In Smart wallet we are going to using Arduino Due Processor board. All the instructions are executed by this Unit. All the commands of user are controlled by this unit. GSM module and GPS module controlled by this unit[11].

3.6 Power Supply Unit

This Unit provides power supply to each and every modules in out project. Some module need 5V supply while some module need 12V supply voltage. So a variable supply voltage is provided by this unit[12].

3.7 OLED Display

The OLED Display is used for trouble shooting purpose[13].
IV The Circuit Diagram

In this section we describe about the circuit diagram of Smart Wallet system. The circuit diagram is illustrated in figure 2. Smart wallet consists of three main components i.e. GPS module for tracking, Distance alarm system using Bluetooth, Hidden camera for taking pictures and GSM module. So GPS module in smart wallet is basically used to track the current location of the user. Distance alarm system using Bluetooth is used to locate the smart wallet if the user forgets the smart wallet in distance of 10m. Hidden camera is used to take pictures of suspicious person or a location. GSM module is used to send pictures taken by hidden camera to number registered in GSM module.

We initialize Smart Wallet system by making power supply unit on which provide 12v and 5v supply to all the modules in the system. Initially we have to pair our wallet with our mobile unit with the help of Bluetooth module. If we lose or forget the wallet, and as we move beyond distance of 10m then the alarm in the mobile unit will indicate that we have lost our wallet at the last place and immediately the wallet will enter in lost mode. The GPS module traces the location of the wallet and sends the live coordinates of the wallet to mobile unit with help of GSM module when the wallet is in the lost Mode. The GSM module is used to coordinate with the mobile unit and send alert messages to the Mobile unit. Camera module is used to take the pictures of the thief when the thief tries to open the wallet. The captured images of the thief would be sent to mobile unit with help of Wifi Ethernet Shield module and BVCAM application is used to display all the images captured by camera module.
The processor unit is the heart of Smart wallet system. This unit controls the entire system of Smart wallet such as execution of instructions, controlling the commands from the user etc. The figure 3 describes the working of our Smart wallet system.

**V The Features of Smart Wallet**

In this section we are going to discuss about the some of the important features of Smart wallet Smart Wallet. Now let us discuss some of the important features of Smart wallet.

5.1 Notification on your Smartphone when your Smart Wallet is left behind:- Accidentally left your wallet at your house/office/restaurant/coffee shop? Here’s a wallet that comes to its own rescue! Now get a notification on your Smartphone as soon as your wallet gets separated from you.

5.2 Find your Smart Wallet using your Smartphone:- Smart Wallet doesn’t pull a disappearing act on you. Use your Smartphone to find your wallet; it’ll ring no matter what it is buried under.

5.3 Find your Smartphone using your Smart Wallet even when it’s on silent:- Sometimes, smart phones have the same tendency as wallets to play hide and seek. This inconvenience is made worse when your Smartphone is on silent and no amount of calls help. Now with the Voyager Smart wallet, just double press the wallet and your phone rings, even when it is in the stealthiest of silent modes. How cool is that?

5.4 Smart’s last seen location on the map, accessible from any phone, tablet or computer:- Right now, you’re probably wondering about this particular loophole: what if you lose both your phone and wallet? Just login to your Google account and see where you last left them. Even if you’re countries apart, it’ll show you exactly where your phone or your wallet is.

**VI. RESULT AND ANALYSIS**

In Section VI we are going to discuss about the result obtained after implementing this project.

The Figure 4 shows the actual model of Smart wallet. The model consist of Arduino Due processor board, Bluetooth Module, Camera Module along with WIFI module and GSM and GPS Module. A mobile charging port is used in model for mobile charging purpose.

The Figure 5 shows the screenshot of GPS Coordinates on users phone.
The Figure 5 shows the screenshot of the coordinates of the smart wallet on the users phone traced by the GPS module. These coordinates are send by GSM module to the users phone and by tracing these coordinates we would get the current location of our wallet.

![Map Screenshot](image)

**Fig. 6. The Screenshot of the Location of the Coordinates**

The Figure 6 shows the screenshot of the Location of the Smart wallet coordinates on the users phone traced by using Google maps in users phone. These coordinates are send by GSM module to the users phone and by tracing these coordinates we would get the current location of our wallet.

![App Screenshot](image)

**Fig. 7. The Screenshot of the Application**

The Figure 7 shows the screenshot of the Android application developed for Smart wallet. This application is used for pairing our mobile phone with smart wallet. The Bluetooth distance alarm system is functioned with the help of this application[14].

The Figure 8 shows the screenshot of the Android application developed for Smart wallet. The Smart Wallet application is used for Bluetooth distance alarm system and BVCAM application is used for camera module system[15].

**VII. CONCLUSION**

The developed prototype is a Smart wallet. The smart Wallet implements the use of real time system, which accounts for the proper functioning of the GSM and GPS system along with Camera Module System. As soon as the Wallet is unpaired with users Smartphone the GPS coordinates and the theft image is sent to the specified phone number using GSM Module and WIFI module Smart Wallet also has some inbuilt features like mobile charging, location tracing, and many more. In future this proposed methodology can be enhanced by reducing the Smart Wallet size and make it more compact system.

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