

# Electronic Security through Pattern Generation Using Android and GSM Technology

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**Abstract:** The main aim of this project is to design a system which is used for security of anything like home, vehicle and banking by opening and closing the door. In our research we presented a part of smart home technology which is using Bluetooth in a mobile device, so it will more easy and efficient to use. It also based on Android which is free open source software. In this paper, a system called door locking system using Bluetooth-based Android Smartphone is proposed and prototyped. First the hardware design and software development are described, then the design of a Bluetooth-based Smartphone application for lock/unlock the door are presented. The hardware design for door-lock system is the combination of android smart phone as the task master, Bluetooth module as command agent, 89C52 microcontroller as controller center / data processing center. All of the tests indicate that all goes according to the initial design of this research.

**Keywords:** Android, GSM, Bluetooth, Smart Phone, Stepper Motor, LCD Display.

## I. INTRODUCTION

Today, most mobile phones are 'smart phone', which offers more advanced capabilities in connectivity issues than regular cell phones. According to an investigate by ABI Research, at the end of 2017, 1.5billion smart phones have been in use: 800 million of them run Android, 300 million run Apple's iOS, and 48 million run Windows Phone. Smart phone usually support one or more short range wireless technologies such as Bluetooth and infrared, making it possible to transfer data via these wireless connections. Smart phone can provide computer mobility, ubiquitous data access, and pervasive intelligence for almost every aspect of business processes and people's daily lives.

One of the smart phone applications that have been developed is present technology. The technology is that are used in homes, vehicles and banking with various apparatus converse over a local network. According to the Smart Homes Association the best definition of smart home technology is: the combination of technology and services through home networking for a better value of living. This technology can be used to monitor, alert and execute, according to the desired functions. Smart homes technology makes automatic connection with environment via Internet, telephone or regular fixed phones. Smart homes actually have the ability to make life easier and more proper. Home networking can also offer peace of mind.

Whether you're at job or on holiday, the smart home will aware you to what's going on, and security system can be built to offer some help in emergency situations. The use of Bluetooth technology in a smart phone today is not just for the transfer of data and files only. In recent years, smart home automation is one of the applications of Bluetooth technology. Bluetooth technology operate over unlicensed,

its available at 2.4GHz frequency, it also can link digital devices within arrange of 10m to 100m at the speed of up to 3Mbps but it depending on the Bluetooth device class . With these qualifications of Bluetooth; we offer a door automation system based on Bluetooth technology, especially in door automation system.

## II. BLOCK DIAGRAM

The block diagram consists of the parts as follows:

- 89C52 micro controller
- Power section
- ALP/C program
- HC05 Bluetooth
- Oscillator
- Reset logic
- 16\*2 LCD display
- Buzzer driver
- Buzzer
- Max 232 interface
- SIM 900 GSM modem
- Motor driver
- Motor for door open

**WORKING:** When the power is switched on GSM, HC-05Bluetooth, LCD and motors will be on. Whenever the android app is opened in the mobile then automatically Blue tooth in the phone will be turned on and it should be paired with HC05 Bluetooth. Some of the patterns are added and saved for the purpose of motor to rotate and opening and closing of a door.

Those generated patterns are saved in microcontroller. Whenever the certain pattern is drawn on mobile screen, that pattern is send to microcontroller through HC05Bluetooth. The pattern will be compared with the already stored patterns in microcontroller.

If the pattern is matched, then it will be displayed on LCD as OK, and then motor will rotate through motor driver.

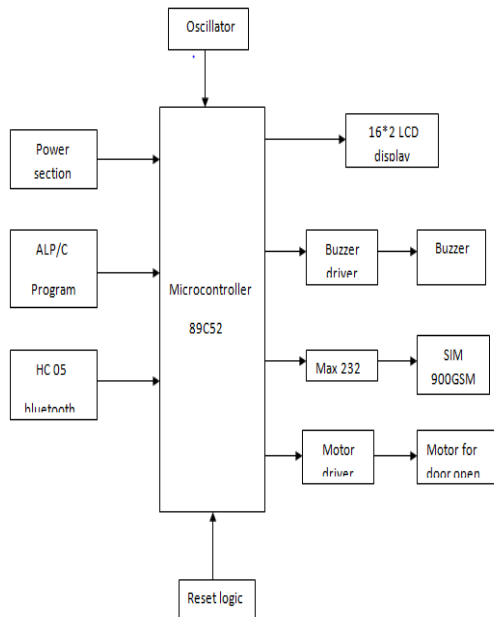


Fig: Block Diagram of Electronic Security Through Pattern Generation Using Gsm

If pattern does not matched with saved pattern for three times continuously the buzzer will be on through buzzer driver then microcontroller will send warning message to the (specified mobile number) user through GSM modem and WR message will be displayed on LCD device as theft at home.

### III. HARDWARE ARCHITECTURE AND IMPLEMENTATION

There are several steps in hardware design, i.e.

- The design of Bluetooth circuit
- The design of door lock circuit
- The design of LCD circuit
- The design of power supply circuit
- The design of driver relay circuit

### IV. SOFTWARE USED

1. Assembly language for 8052
2. 8052 Cross compiler
3. Universal Programmer soft ware
4. ORCAD for PCB designing and layout.

### Software Dumping Procedure:

1. The assembly language Instructions typed in dos editor or notepad with an extension of .ASM.
2. Compile the above .asm file with 8052 cross assembler.
3. The assembler converts the .ASM file into .HEX file (Contains all op codes).
4. Copy the converted Hex file into internal flash Rom of Micro Controller with the help of Universal Programmer or Micro Controller Programmer.

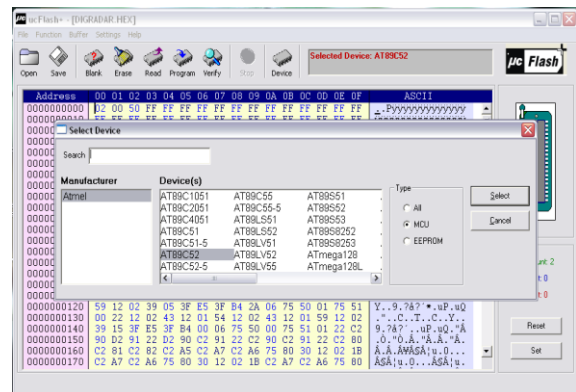


Fig: Software Dumping

### V. FLOW CHART

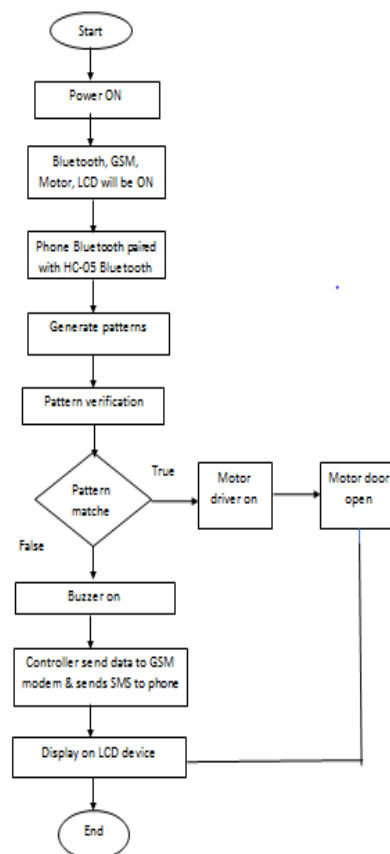


Fig: Flow Chart

### VI. RESULTS





## VII. CONCLUSION

This is an ongoing project. This paper gives basic idea of how to control home security for smart home, especially for door key lock. It also provide a security and easy for Android phone/tab users. This project based on Android and both of which are Free Open Source Software. So the implementation rate is inexpensive and it is reasonable by a common person. Accomplishment of wireless Bluetooth connection in microcontroller permits the system installation in more easy way. The system has been successfully designed and prototyped to control the door condition using an Android Bluetooth-enabled phone and Bluetooth modules via Bluetooth HC-05. We have discussed a simple prototype in this paper but in future it can be extended to many other regions.

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