

Image Based Password Authentication Using Touch Screen and GSM Module

^[1] K. Sumadhura, ^[2] R. Bhargavi, ^[3] R.L.N Bharath, ^[4] P. Phaneendhra Nath, ^[5] N.Veeraiah
^{[1][2][3][4]} B.Tech, Final year students of DVR & Dr.HS MIC college of Technology, Kanchikacherla, India.
^[5] Asst.Professor, Dept.of ECE, MIC College of Technology

Abstract- Technology is playing a vital role in enhancing security. Without cameras, detectors and alarms world would be unable to identify threats and respond appropriately. An approach is to be made where an illiterate can also be benefited by the boons of technology with less cost and more user-friendliness. With this prototype, an interface is made where even an un-educated or a person of any age can use the application with ease. The inputs will be images where it is easy for any person to remember in a sequence. This can serve multiple areas like farms, cattle area, industries. The main aim of this paper is to enhance security to the root levels which is more efficient and low cost. Here in this paper, the password need not be a group of characters rather series of images can be used. With the use of graphical LCD and touch screen, this can be used effortlessly. The touch screen provides an easy interaction of the user with the application as it can be easily operated. Fastness has become a key role in every aspect, with the use of GSM module owner can get the information immediately if any broke out has been happened. A message will be sent to the owner when the door has been opened when a wrong password has been entered or when a fire broke out has occurred then the necessary precautions will be taken immediately. To accomplish this task an onboard computer is used which has input and output ports and is termed as the microcontroller. Advanced RISC Machine (ARM) is the heart of the application and controls all the processes.

Index Terms: — GLCD, Micro-Controller, Fire sensor, Touch screen, GSM module.

I. INTRODUCTION

The motto of this paper is to provide security wherein every individual can be able to access it and should be benefited by the boons of the technology. Image based password authentication is a concept where passwords are in form of images. Person of any age can easily remember this password as images can be easily remembered than characters in form of string. Enhancing security can be done through this project as this can be used by any class of the society because of its low cost and accessibility. Using touch screen we can more easily access the project. GSM module will provide the information about the access of the door regularly so if there's any unauthorized person accessing the door then the information will immediately passed to the owner. Comparing with the existing technology this will be more beneficial as it is more easily used because of touch screen which gives comfort of Selecting the images easily, GLCD which gives the display of images without using much technology and it is low cost, GSM which instantly provides the information of the access of the door Buzzer is used to intimate surrounding places.

II. LITERATURE REVIEW

In under developed areas there is no proper security system even there is a lot of advent in the technology nowadays. In especially cattle areas gates are made of small wooden pieces which can be easily damaged by the intruder. As technology is increasing day by day we even have to provide proper security even for these places. With less cost and more user-friendliness a system has to be developed where even an illiterate must find easy to use such an application

III. BLOCK DIAGRAM

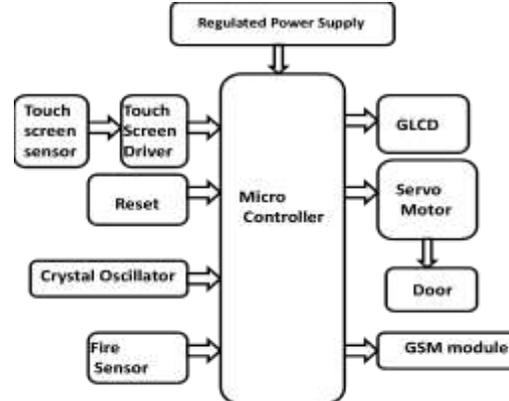


Fig1. Block Diagram of Image Based Password Authentication Using Touch Screen And GSM Module

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IV. HARDWARE DESCRIPTION

1. Microcontroller
2. Touch screen Sensor
3. GLCD
4. GSM Module

1. Microcontroller



Fig2. ARM-7 Microcontroller

Microcontroller used in this paper is ARM7TDMI-S LPC2148 (Advanced RISC Machine). Some of the

Features Are:

- I6 bit/32 bit thumb micro-controller.
- Consists of 40 kB of on chip static RAM and 512 kB on chip flash memory.
- Two 10-bit ADC which provides 14 analog inputs.
- A 10-bit DAC which gives variable analog outputs.
- A RTC with 32 kHz clock input.
- Power saving mode

2. Touch Screen

Touch screen technology deals with the direct manipulation of gestures into digital data. In 1960s touch screen was first invented by E.A Johnson. The capacitive touch screen was first invented and later in 70's resistive touch screen was invented by Dr G. Samuel Hurst. Nowadays the touch screen has been widely used in every application to ease the complexity of giving the input. Various applications are ATM machines, Cell phones, Video games...etc. The popularity of cell-phone is due to the use of the touch screen as it gives an easy way to control the system. The demand for it is increasing rapidly day-by-day which allows any application to use it. Different types of touch screen technologies are:

1. Resistive
2. Surface acoustic wave
3. Capacitive
4. Surface capacitance
5. Projected capacitance
6. Infrared

7. Strain Gauge
8. Optical imaging.

Here in this paper, we are using a resistive touch screen as it is of low cost and can withstand in any harsh environment. Resistive touch screen consists of different layers such as:

1. Polyester Film
2. Transparent electrode film
3. Insulator
4. Spacer dot
5. Glass

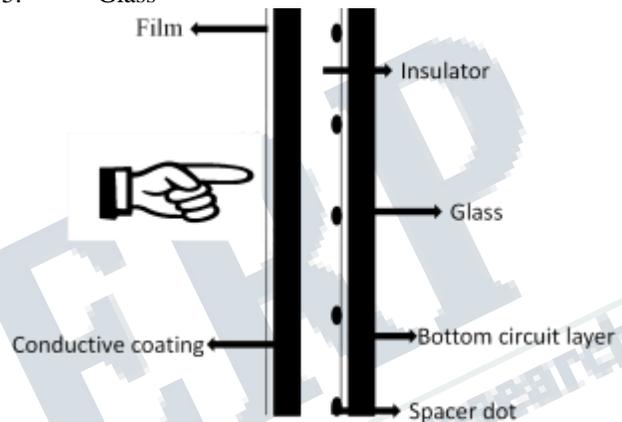


Fig3. Diagram of touch screen working

A little gap exists between glass screen and film screen using this panel is made. Film layer contains electrodes. Whenever the film screen is touched with a finger or any type of object bend occurs. When bending, the two electrode films connect, which generates a current flow. Resistive touch screen have many advantages like highly durability, cost-effectiveness and in addition it is less sensitive to the scratches on the screen. A 4 wire resistive touch screen has uniformly coated with a resistive material and is separated by an air gap or an insulator. Electrodes are placed on the edges of the layer.

3. Graphical Liquid Crystal Display



Fig4. GLCD

Here JHD12864E GLCD is used in this paper. It is a 128x64 display where it has 1024 pixels. 128x64 is divided into two

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parts equally and each is controlled by a separate controller. It has 128 columns and 64 rows. Each page has 8x8 bits which form 1 page. 8 such pages makes one half and is controlled by a controller called controller selected. GLCD consists of 20 pins. Two power supply pins (VSS), Two Ground pins (GND), Two Controller Select (CS0, CS1), Eight Data pins (D0-D7), Contrast adjust pin, Register Select pin (RS), Read/Write pin, Enable pin (En), Reset pin (RST), Output Voltage pin (Vout). The difference between an LCD and GLCD is that LCD can only display alphanumeric letters but can't display images and can display up to certain dimensions. Graphical Liquid Crystal Display (GLCD) is used to display customized characters and images. It finds many applications in video games, mobile phones, lifts.

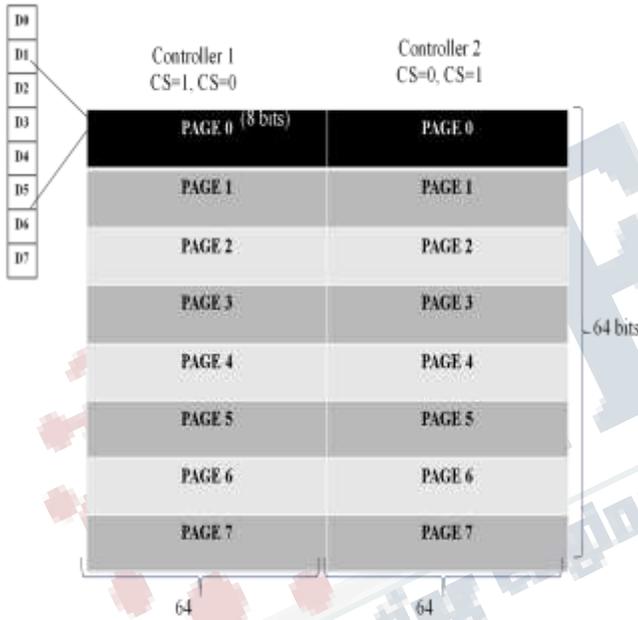


Fig5. Tabular Representation of GLCD Bits assignment

Each half of the display has vertical addresses of 64 pixels which are addressed from 0x40 to 0x7F and is represented as the Y-axis. Horizontal addresses are from 0xB8 to 0xBF and are represented as X-axis. Left half of the display is controlled by chip select CS1=1, CS0=0. Right half of the display is controlled by chip select CS1=0, CS=1. X-axis addresses are used to select a page from page-0 to page-7.

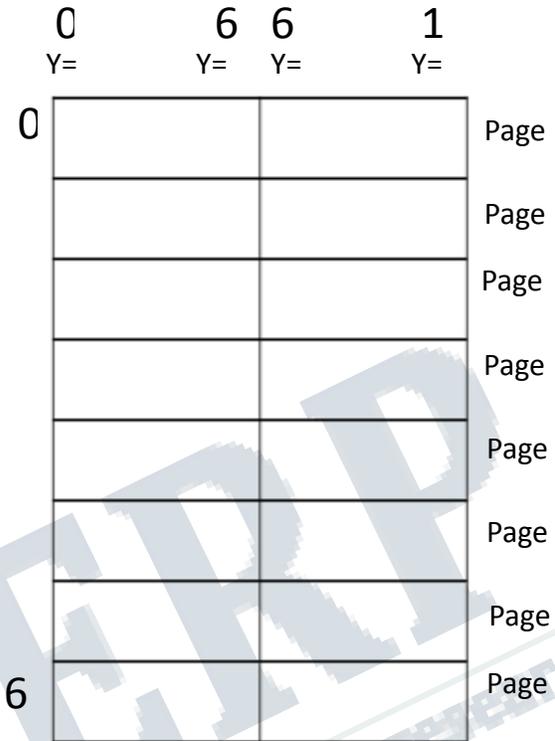


Fig6. Horizontal and Vertical addresses

4. Global System for Mobile Communication:



Fig7. GSM Module

GSM is a cellular network in which the mobile phones connect by searching a cell in the nearby vicinity. Global System for Mobile Communication (GSM) operates in 4 frequency ranges. Mostly it operates in 900MHz or 1800MHz bands. Country like America use 850MHz and 1900MHz as 900MHz and 1800MHz frequency bands were already allocated. The frequency bands of 400 and 450MHz were previously used by first generation is assigned in some of the countries. GSM-900 uses frequencies in the ranges of 890-915 MHz to send the information from the mobile

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station to the base station (uplink) and the downlink frequencies are in the ranges of 935-960 MHz (base station to mobile station) which provides 124 radio channels. GSM Module has been extended to cover a large frequency ranges which is denoted by "E-GSM" uses uplink frequencies of 880-915 MHz and downlink frequencies of 925-960 MHz, By adding 50 channels. TDMA allows 8-full rate or 16- half rate speech channels per radio frequency channel.

5. Buzzer:



Fig8. Buzzer

V. WORKING PRINCIPLE

Here the microcontroller (ARM-7) will be the brain of the system in which it controls and coordinates all the commands. As GLCD can display images, the images to be chosen are displayed over which the user or owner will select the order of his password in which it has been already stored. When the password is chosen is right the door opens and we are using a dc motor for it. Immediately the message will be sent to the owner's number. If the password is chosen to wrong the doors opens not and a message will be sent to the owner. When a fire broke out takes place the doors automatically opens and a message will be sent to the owner. The buzzer is an electronic signaling device used in automobiles, household applications, etc. Pressure variations occur whenever an electric potential is applied across piezo-electric material. When the voltage difference occurred in the push and pull of conductors take place internally. The sharp sound is generated by the continuous push and pull operation. The sound pitch is not dependent on the voltage level, so piezo-electric buzzer is independent on voltage ranges. It generates sound in the ranges of 2-4 KHz.

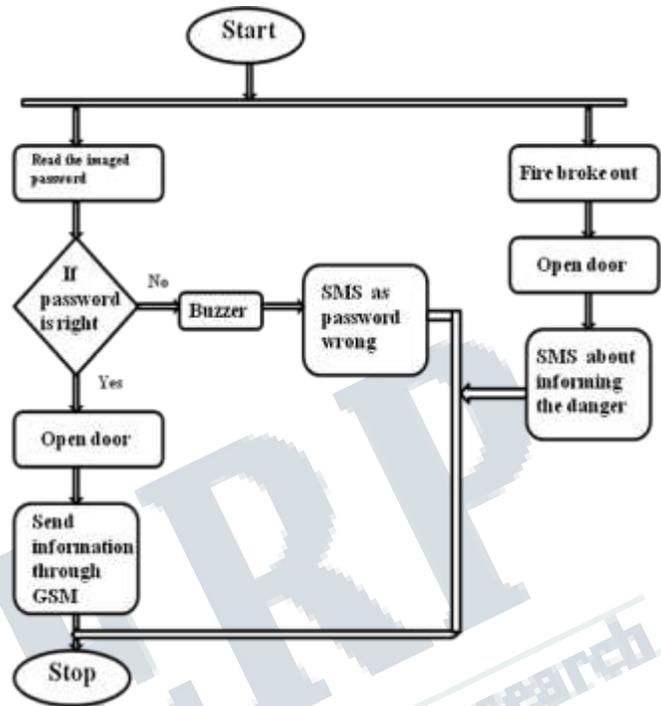


Fig9. Design Flow

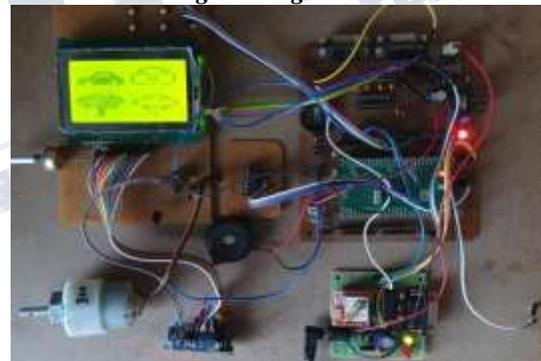


Fig10. Image based password authentication using touch screen and GSM

VI. RESULT

This project provides user a image based password where he can easily interact with the system using touch screen and the security is enhanced using GSM module.

VII. CONCLUSION

This paper "Image Based Password Authentication Using Touch screen and GSM" provides a user friendliness and low cost system which will enhance the security.

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