GSM based Navigation Digital Notice Board

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Abstract: - **In this paper we propose digital notice board explains how to establish an Effective and reliable communication between user and GSM based Notice board using microcontroller, by using direction sensor (IR direction sensor). We can rotate the news or notice or time table or related to any data which will be display on notice board from right to left, left to right, up to down and down to up. In today's life most of the colleges, offices use a simple notice board in which we cannot manage the whole data on single page for long time and it need more maintenance as compare to digital notice board. Some of the places need quick notices display on notice board like in college, railway stations share-market , restaurant and this notice should be in real-time, so we need a real-time notice board.**

This project is our experiment to give a start to the area of manual handling notice board. In this, we present a feature extraction and sensor fusion technique that exploits a set of wireless nodes equipped with IR sensors to track hand movement.

Keywords: LCD, IR sensor, USB,QBS,GSM Module

I. INTRODUCTION

Sensors are basically electronic devices which are used to sense the changes that occur in their surroundings. The change is in color ,temperature, moisture, sound, heat etc. They sense the change and work accordingly. In Infrared sensor , Emitter emits the IR rays and detector detects that IR rays. we built a controller that interfaces with digital display through USB. The device can control slide transitions based on hand motions. When it detects any movement of hand motion near the display that makes the displays more interactive and interesting for viewers.

With a simple USB connection and no installation at all, a system admin can allow visitors interfacing with this project to use hand motions to direct a PowerPoint to advance or rewind at will with no threat to system security. A normal hand wave is enough to trigger the display. The device was able to connect to the several Display that we tested it on and be recognized as a generic Human Interface Device. Sometimes,however Pressing the buttons or activating the IR sensors resulted in the appropriate keystrokes being transmitted to the display.

II. LITERATURE SURVEY

There does not seem to be any previous work that is aimed at publicly displayed PowerPoint control. It seems that everyone relies solely on the fixed rate timers built into PowerPoint for public displays. With regard to non-public display Power Points, normal PowerPoint presentations are usually conducted in person and can thus be controlled easily with remotes. There

is thus no motivation for a motion sensing controller in this context. As far as we know, there is no previous work that has the same goal as ours does.

Prachee U. Ketkar (2013) works on LED scrolling message display system for that she uses GSM mobile phone. This public addressing system used by user in shopping malls, public transportation ,theatres, traffic signs ,etc. The system includes SMA antenna MAX 232 for communication purpose.

However, our proposed project does draw aspects from many other previous works that relate to MP3 playback, SD card usage, and USB communication.

Navigational sensor are very ideal solution for handling the digital notice board In educational institutions, the organization uses circulars and notice boards in order to convey information to the students. This methodology will take added time for updating and many students may not be aware of the information displayed on notice boards which are not eye catching ones. So by using this type of display we overcomes the problems such as we can display all the information at time because it is manual handling notice board and by scrolling left right ,up-down we can read all the information .

Most of the Notice Board are based on GSM Based, massage based some are power line communication based. A Notice Board is a place where people can leave public messages, for example, to advertise things to buy or sell, announce events, or provide information. Notice boards are often made of a material such as cork to facilitate addition and removal of paper messages or it can be placed on digital devices such as computers, phones so people can leave and erase messages for other people to read and see. The main aim of this research work is to make information dissemination much easier in a paperless community as the world tends to graduate into that line of interaction.

III. ANALYSIS OF PROBLEM

There are many times when displays running PowerPoint are placed in public locations to advertise upcoming events, offerings, and other opportunities to passers-by. These displays are typically set up as slideshows by the administrator, and slides are cycled through at a fixed rate. Viewers have no control over which slide to read and are thus inconvenienced whenever slide transitions occur too quickly or too slowly. Visitors may be further frustrated because the slideshow loops in only one direction. However, the visitor cannot be given control of the PowerPoint host computer for many reasons. In one lecture Professor Bruce Land was tossing out ideas for final projects, and he suggested PowerPoint control for the displays

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down the hall on the second floor of Phillips Hall. These displays are large TVs that are fed video input by Mac Minis underneath each one. We decided to make good on the idea and implement it. And so, while the implementation and design is ours, the idea belongs to Professor Bruce Land.

IV. SYSTEM DESCRIPTION
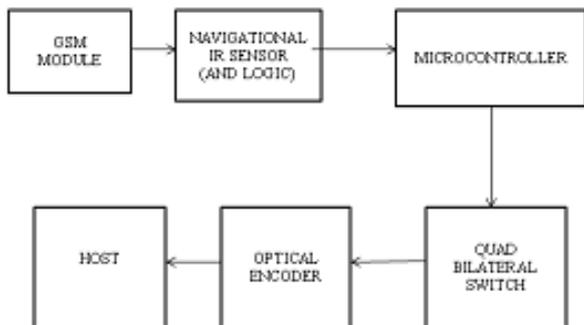
Fig. 1. Block Diagram of GSM Based Navigational Digital Notice Board Sensor --

Depending upon which IR receiver received the signal first and last, the algorithm that resides in the system understands the hand movement and sends the control signal to the microcontroller through the quad bilateral switch and optical encoder.

TABLE I.   SCROLLING OF DIGITAL DISPLAY

Sr.No.	Movement of Hand	Output
1	Top to Bottom	Scroll Down
2	Bottom to Top	Scroll Up
3	Left to Right	Slide Screen Right
4	Right to Left	Slide Screen Left/

Fig. 2. Hand movement in front of display

This four sensor IR sensor (Infrared Sensor) is used for moment of up down and right left. The HS0038A2. – series are miniaturized receivers for infrared remote control systems. PIN diode and preamplifier are assembled on lead frame, the epoxy package is designed as IR filter. The   demodulated output signal can directly be decoded by a microcontroller. Photo detector and preamplifier in one package. Basically this type sensor is used because Low power consumption as well as Improved shielding against electrical field disturbance. It is necessary to know that have deviated from the left or right of line. Therefore, sensors are placed on the right (Right Navigation Sensor (RNS)) and left (Left Navigation Sensor (LNS)).The distance between each sensors depend on number of sensors used and width of straight line (distance between sensors should be less than width of line) although distance between sensors may not be constant it depends on the logic.

The input of the hand movement i.e.(R-L, L-R, U-D, D-P) to the sensor on which the sensor will get the direction ,suppose we have to rotate from up to down then firstly we have to trigger UP IR sensor which can be trigger with the help of hand motion & move the hand towards the DOWN sensor. . Each of the button switch is pulled up normally and provides a GND when pressed. This design guide shows how to connect to and manage a standard configuration of mouse hardware as well as handle the USB protocol. This protocol provides a standard way of reporting hand movement to the display.

The QBS(CD4066BC) output provided to the microcontroller, it is a quad bilateral switch intended for the transmission or multiplexing of analog or digital signals. It is pin-for-pin compatible with CD4016BC, but has a much lower "ON" resistance, and "ON" resistance is relatively constant over the input-signal range.

From above discussion we see that microcontroller, IR sensor ,Optical encoder Bilateral switch are the key component of the system.

A. Power supply

Power Supply is an important part of a circuit. It provides required supply to different blocks of the circuit from input 230 V AC. The main blocks include transformer, rectifier circuit, filter circuit, and regulator circuit. Voltage regulator IC LM7805 is used as a voltage regulator.[8]
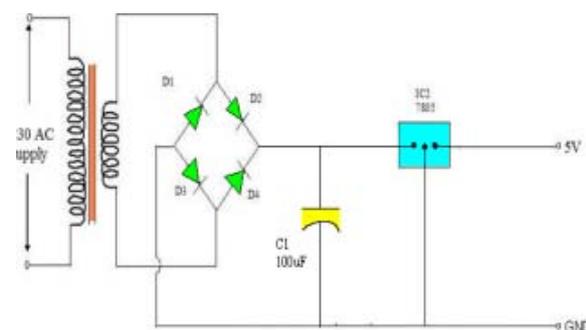

Fig. 3. Power supply Section

The microcontroller and other devices get power supply from AC to DC adapter through7805, 5 volts regulator. The adapter output voltage will be 12V DC non regulated. The

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7805/7812 voltage regulators are used to convert 12 V to 5V/12V DC.

B. Micro controller - AT89C52
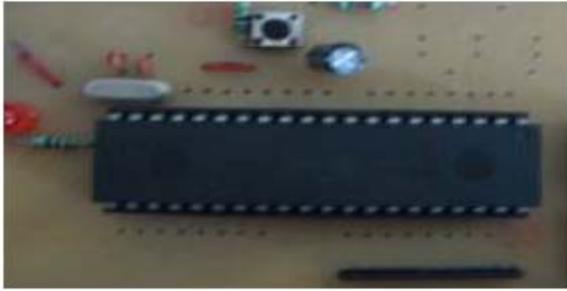
Fig. 4. Pin AT89C52 microcontroller

The AT89S52 is a low-power, high-performance CMOS 8-bit microcontroller with 8K bytes of in-system programmable Flash memory. The device is manufactured using Atmel's high-density nonvolatile memory technology and is compatible with the indus-try-standard 89C52 instruction set and pinout. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional nonvolatile memory pro- grammer. By combining a versatile 8-bit CPU with in-system programmable Flash on a monolithic chip, the Atmel AT89C52 is a powerful microcontroller which provides a highly-flexible and cost-effective solution to many embedded control applications. The AT89C52 provides the following standard features: 8K bytes of Flash, 256 bytes of RAM, 32 I/O lines, Watchdog timer, two data pointers, three 16-bit timer/counters, asix-vector two-level interrupt architecture, a full duplex serial port, on-chip oscillator,and clock circuitry. In addition, the AT89C52 is designed with static logic for operation down to zero frequency and supports two software selectable power saving modes. The Idle Mode stops the CPU while allowing the RAM, timer/counters, serial port, and interrupt system to continue functioning. The Power-down mode saves the RAM con- tents but freezes the oscillator, disabling all other chip functions until the next interrupt or hardware reset.

C. IR SENSOR

In this proposed system we are going to use HS0038A2 IR sensor for scrolling the screen of digital display. This IR sensor series are miniaturized receivers for infrared remote control systems. PIN diode and preamplifier are assembled on lead frame, the epoxy package is designed as IR filter. The demodulated output signal can directly be decoded by a microcontroller. HS0038A2. is the standard IR remote control receiver series, supporting all major transmission codes.The circuit of the HS0038A2. is designed in that way that unexpected output pulses due to noise or Disturbance signals are avoided. A band pass filter, an integrator stage and an automatic gain control are used to suppress such disturbances. The distinguishing mark between data signal and disturbance signal are carrier frequency, burst length and duty cycle. Carrier frequency is close to 38kHz.

D. OPTICAL ENCODER

In this proposed system the output of QBS switch given to USB port of personal computer through optical encoder. This Optical Navigation Technology contains an Image Acquisition System, a Digital Signal Processor, and a three-wire serial port. The ADNS-5020-EN's reads the Delta_X and Delta_Y registers to obtain any horizontal and vertical motion information happening as a result of the palm of hand being moved. The three-wire synchronous serial port is used to set and read parameters in the ADNS-5020-EN, and to read out the motion, (delta) X and (delta) Y information. This motion information will be reported to the PC to update the position of the cursor. The advantages of using ADNS-5020-EN optical sensor are: good tracking accuracy, small form factor, sensor programming flexibility via SPI port, and the automatic frame rate feature. Furthermore, ADNS-5020-EN sensor has built-in oscillator and on-chip LED driver to minimize external components. Additionally, Burst mode is another special serial port operation mode which may be used to reduce the serial transaction time for motion read operation.

E. Bilateral switch

CD4066BMS is a quad bilateral switch intended for the transmission or multiplexing of analog or digital signals. It is pin for pin compatible with CD4016B, but exhibits a muchlower on state resistance. In addition, the on-state resistance is relatively constant over the full input signal range. The CD4066BMS consists of four independent bilateral switches. A single control signal is required per switch. Both the p and the n device in a given switch are biased on or off simultaneously by the control signal. As shown in Figure 1, the well of the n channel device on each switch is either tied to the input when the switch is on or to VSS when the switch is off. This configuration eliminates the variation of the switch transistor threshold voltage with input signal, and thus keeps the on-state resistance low over the full operating signal range. The advantages over single channel switches include peak input signal voltage swings equal to the full supply voltage, and more constant on-state impedance over the input signal range. For sample and hold applications, however, the CD4016B is recommended**.**

F. Software required

1) Express PCB:

Express PCB is free PCB software and is a snap to learn and use. Designing circuit boards is simple for the beginner and efficient for the professional. The board manufacturing service makes top quality two and four layer PCBs.

2) Embedded C:

Embedded C is used for microcontroller programming. There is a large and growing international demand for programmers with 'embedded' skills, and many desktop developers are starting to move into this important area.

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Because most embedded projects have severe cost constraints, they tend to use low-cost processors like the 8051 family of devices considered in this paper.

3) Keil:

Keil development tools for the 8051 Microcontroller Architecture support every level of software developer from the professional applications engineer to the student just learning about embedded software development. The Keil 8051 Development Tools are designed to solve the complex problems facing embedded software developers.

V. CONCLUSIONS

By introducing the concept of wireless technology we can make our communication more efficient and faster, with greater efficiency we can handle display with less errors and maintenance. We will able to meet all the goals as per above proposed work. The controller is able to perform the functions of controlling the display it is cost efficient system and very easy to handle. Latency involved in using of papers in displaying of notices is avoided and the information can be updated by the user.

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