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Wireless Direction Sensor for Digital Notice Board for Navigation

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***Abstract:*-Our project digital notice board gives idea about how to establish an Effective and reliable communication between user and Notice board using microcontroller, by using direction sensor (IR direction sensor). This -notice board has various applications used in several domains including banks, ATM, stoke exchanges, educational sector i.e., in schools and colleges etc. User can rotate the news related any data which will be display on notice board according to him from left to right to left, up to down and down to up in any direction. In today's life many places like that colleges, offices use a simple notice board in which we cannot manage the whole data on single page for long time and it required more maintenance as compare to our digital notice board. Some of the places need quick notices display on notice board like in college, railway stations share-market and this notice should be in real-time, so we need a real-time notice board.**

Here we present a feature extraction and sensor fusion technique that exploits a set of wireless nodes equipped with IR sensors to track hand movement on the area of manual handling notice board.

***Keywords:*Digital display, IR sensor, Optical encoder, Quad bilateral switch.**

I.INTRODUCTION

The wireless direction sensor for digital notice board for navigation uses touch less technology .This type of digital board is based on touch less technology by which it is possible to Handel the display without touching the screen by using the movement of hand, and this action is accomplished by using IR sensor, in comparison of other notice board this system does not require any accessories like mouse, keypad, touchpad etc. The navigation process uses three key pieces of information to analyze the current position and deliver useful navigation information to the user. These pieces of information are: (1) the user's current position in front of the screen (2) the direction in which the user is moving, and (3) the presence of objects in the surrounding area that may be the hand of user.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 normalhand 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.

II.PROBLEM SPECIFICATION

A touch screen Technology used is an electronic visual display that can detect the presence and location of a touch within the display area. The term generally refers to touching the display of the device with a finger or hand. Touch screens technology that accepts direct on screen input. But touch screen panels can be damaged by sharp objects and in some situation many times when displays are placed in public locations to advertise upcoming events, offerings, and other opportunities to passers-by. In some public places

displays are typically set up as slideshows, and these display are uncontrollable that 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 on the display for many reasons.

Up to now, this touch less technology has been too exclusive and too restricted to be practical for many applications. The digital notice board are slowly started by adopting this technology because this type of notice board have become cheaper and easy to handle as compare to touch screen notice board. As per this reason, it is required to adopt the wireless direction sensor for digital notice board in this project.

III.PROPOSED SYSTEM

A digital notice board is a display which can detect the presence and location of a touch within the display area. They provide very initiative user interfaces that can be used not only in screens of computer system in industry but also in various places such as college, railway stations, share-market, etc. Here It is to be propose and demonstrate a transparent and flexible direction sensor which is designed for digital display application. In the last few years, research in multi touch systems has been steadily rising. A large fraction of this project is to be focused on developing sensor systems which enable the detection of multiple contact points on an interactive surface. In this project, the sensor is constructed on the display on right, left, up and down side of the screen and is therefore cheap to manufacture. Additionally, it can be completely hidden behind the display without the need for any front-mounted components.

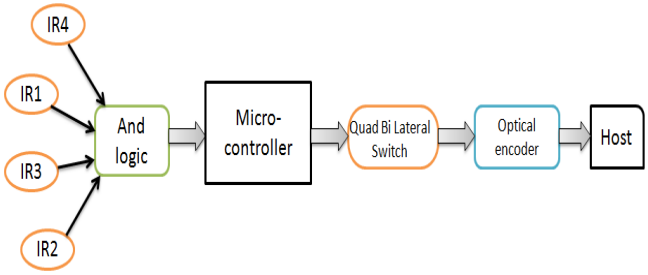

Fig1. Proposed System Block Diagram

IV. DESIGN PRINCIPLES

This Project presents a prototype of a navigation system that helps to move display without touch by input of hand. This system designed has been focused on usability of the touch less notice board solution and also on its suitability for deployment in several public areas. The main objective of the system is to provide, in real-time, useful digital display using direction sensor for navigation. Information is to provide that enables a user to make a display with appropriate manner on which route to follow in hand movement. It uses micro-navigation system. In order to deal with these issues, the solutions are uses the interaction among several components as a platform to capture, process the user, to provide environment information, to generate and deliver navigation messages to users while they are moving in an indoor area. The system's main components are as follows: IR sensor, microcontroller, bilateral switch, and optical encoder that delivers the navigation display information to the user through touch less input such as hand movement.

When the users request to check information on the display, they move the hand as they required. It activates the IR sensor which is placed on digital display. The software application instantly tries to determine the user's position and the presence of hand in

the surrounding display. The user's position and movement are detected by the sensor.

A) Implementation plan

1. Checking availability of components and more related material of IR sensor and display.
2. Microcontroller board purchasing.
3. Testing c code for sensor and serial port.
5. Hardware assembly and testing.
6. Embedded C programming in Keil and implementing with hardware, solving issues..
8. Multiple testing of code and solving errors.
9. Merging the hardware and software system to implement and checks complete system working.

B) Flow chart of System

A work flow of a system is the stepwise representation of the operation of the system. The steps are represented in below mentioned flow chart as shown in fig

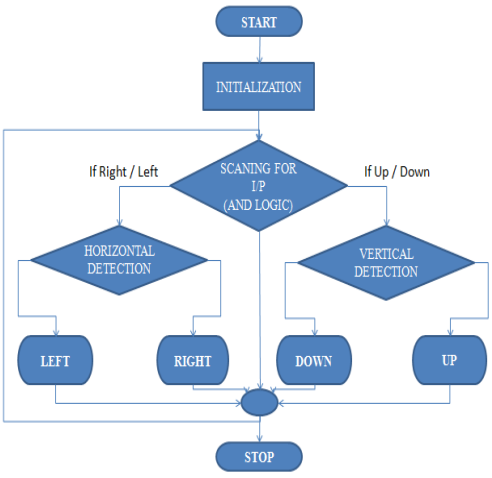

Fig2. Program Flow Chart

C) Software required

1) Express PCB-ExpressPCB is free PCB software and isa 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) EmbeddedC-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. Because most embeddedprojects 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.

V. EXPERIMENTAL RESULTS

In this section we discussed about the working flow of entire system and screen shots of the navigational digital notice board .As mentioned below, the fig. 5.2 gives complete hardware of navigational digital notice board in that the IR sensor is used for scrolling the display without touch.

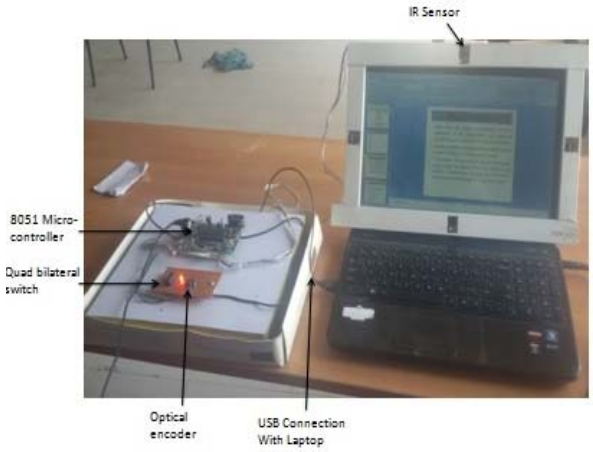

Figure. Complete Navigational Digital Notice Board system.

The above figure shows the display, IR sensor, Quad bilateral switch, optical encoder, and microcontroller. The LED shows the status of system. The following table shows the output with movement of hand.

Table1.Scrolling of display

Sr.No.	Movement of hand	Output
1	Top to bottom	Scroll Down
2	Bottom to top	Scroll Down
3	Left to right	Slide Screen right
4	Right to Left	Slide Screen right

When I move the hand from Down to up from the sensor on the panel then the panel will scroll up side without touch. The distance of hand from the sensor is about 10cm.

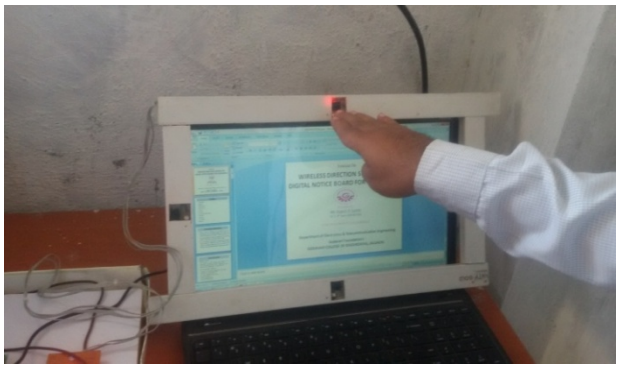

Fig3. Scrolling of display to up side

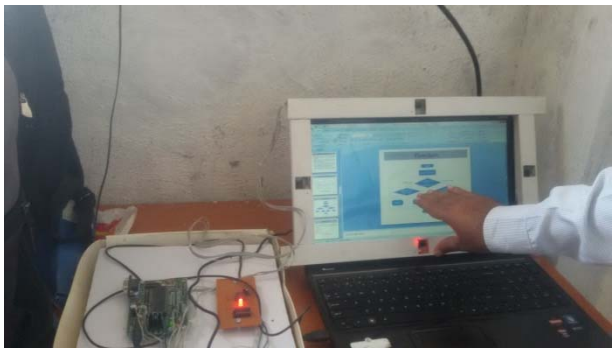

Fig4. Scrolling of display to down side

In above figure , When I move the hand from the sensor frame which are located on the display from up to down direction then the screen on display will scroll down side.

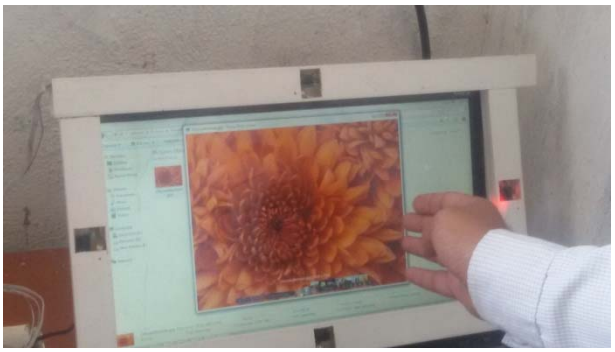

Fig5.Scrolling of display to right side

In above figure , When I move the hand from the sensor frame which are located on the panel from left to right direction then the screen on panel will scroll right side.

Fig6. Scrolling of display to left side

In figure , When I move the hand from the sensor frame which are located on the panel from right to left direction then the screen on display will scroll left side.

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 as early as possible by the user. The navigational algorithm used for detecting the hand

movement of the users in front of the screen works satisfactorily as compared to other technique which discussed in related literature survey, also avoid the hardware like mouse and touchpad. It can be set up at public transport places like railway station, bus station, and airport and also at roadside for traffic control and in emergency situations.. In that system sensors worked correctly to control the display, the user simply needs to move his hand over the sensors.

VI.CONCLUSIONS

By introducing the concept of wireless technology, It is possible to make our communication more efficient and faster. Because of this efficiency It is to handle display with less errors and maintenance. We will able to meet all the goals as per above proposed work. The controller and IR sensor is able to perform the functions of controlling the display.

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