

Survey of Wireless Electric board for Writing & sketching

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Abstract - These days use of multimedia applications is the advanced way for teaching learning process in classrooms. Use of chalk produces dust which pollutes air due to which several health problems may arise to teachers & students. Chalk dust causes throat infections mainly which will turn into sever issues of health of students and teachers. To use multimedia helps in better teaching and learning process. Some companies which works in embedded are manufacturing smart equipments which can efficiently replace the traditional blackboard but that products are costly. This project has mainly two units. Handheld unit which will be controlled by user i.e. teacher & Remote unit which will be interfaced with display where we want to see. Both contains Raspberry Pi which consist of ARM 11 processor. Embedded Linux operating system for its software. Teacher has to write on a notebook sized resistive touch screen which is interfaced with handheld unit having Raspberry Pi board. Written signals are converted into electrical signals and given to remote unit which too have Raspberry Pi board by using WIFI module. Then Arm11 board controls and processes these signals and displays the written contents enhanced on the projector/ PC screen in larger view. Screen will be interfaced HDMI port provided with Raspberry-Pi. This complete module makes classroom teaching learning more efficient and easy for the sake of students and teachers.

Key Words: Raspberry-Pi, HDMI, WIFI, ARM 11, Linux.

1. INTRODUCTION

In conventional way of teaching teacher have to write on a black board using chalk which produces dust which may produce health issues. But this is the conventional of teaching way that has been replaced by white boards. Chalks can produce lot of dust which causes hazardous effects on the health of students and teachers which may turn into serious health problem. These problems are overcome by using multimedia in classroom for teaching. Using multimedia applications is efficient teaching and learning process. Nowadays with the advancements in technology, traditional black boards & white boards are replaced by smart equipments manufactured by companies like Hitachi, Panasonic etc. The proposed paper presents a wireless board which includes two units one is handheld module and

remote module. Handheld unit is controlled by user or teacher. Another module is remote unit which should be interfaced with big screen to display.

2. PROPOSED SYSTEM

In proposed project two systems are designed one is handheld unit & one is receiver unit. Handheld module is controlled by user or teacher. Both module contains Raspberry Pi module. It is also called as Rpi or RasPi. Teacher has to write on a resistive touch screen which is interfaced with Raspberry pi board. Hand written signals are converted into electrical form & will be send to Raspberry Pi Board which is having ARM 11 by using wireless module (WIFI). Remote unit collects, processes these signals & displays it in larger form on the screen using projector which can be interfaced with Raspberry Pi module using video out pin. This makes teaching and learning process more easy and efficient for the sake of students and teachers.

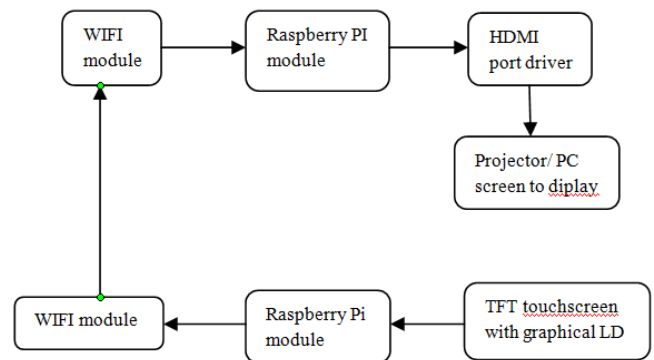


Fig -1: System Overview

The researchers Di Wu, Yang Zhang & Baoding Zhou proposed a system, Wireless Electric Board Based on an ARM-based Embedded System [1]. In which they have used two system one is handheld unit & one is remote unit. ARM 9 board, 7 inch TFT LCD touch screen & RF2401 for handheld system as hardware & embedded RTOS is used as software. Similarly PC & projector as hardware for the remote unit & PC terminal software for PC.

The researchers Mrs. Mayuri Joshi*, Prof. Sunil .S. Morade proposed a system, Interactive Electronic Board Using ARM Processor [4]. In which they have used two systems handheld unit & remote unit. Handheld unit has ARM 9

board for processing, 7 Inch TFT touch screen, wireless module for communication & Linux operating system. Remote unit has 2 parts PC, Projector.

The researchers Mr. Shekhar H. Bodake, Dr. G.U. Kharat, proposed a system, Design of Wireless Electric Board for Writing and Sketching Using ARM Based Embedded System [3]. In this system they have designed two units, one is handheld unit & one is remote unit. Handheld unit has ARM 9 board with Zigbee which will be used by teacher & remote unit will have Raspberry Pi & Zigbee for communication with handheld unit.

2. HARDWARE DESIGN & METHODS

2.1 Handheld Unit

Handheld unit mainly consist of Raspberry Pi board on which ARM 11 is the processor. It also contains resistive touch screen with graphical LCD. It senses touch & convert it into electrical signal & will be sent to the remote unit using Wifi module.

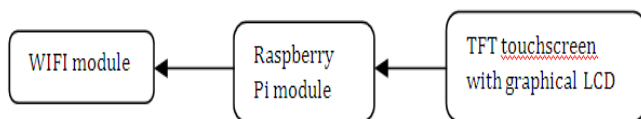


Fig -2: Handheld unit

Raspberry Pi module is used as heart of unit. Raspberry Pi the multipurpose board, it is nothing but small computer. So the touch sensed through resistive touch screen will be processed by ARM 11 which is on Raspberry. Signal processed by this Raspberry Pi will be given to the Remote unit by using Wi-Fi module.

The researchers Mrs. Mayuri Joshi*, Prof. Sunil.S. Morade proposed a system, Interactive Electronic Board Using ARM Processor [4]. In this project hardware design includes hand-held terminal hardware and PC terminal. Hand-held terminal hardware consists of ARM 9 Processor, on board. NANAD and NOR Flash memory. The processor is interfaced to 7 inch Touch Screen, memories, and various input output modules along with the wireless transceiver. ARM 9 board is more costly compared to Raspberry Pi.

The researchers Di Wu, Yang Zhang & Baoding Zhou proposed a system, Wireless Electric Board Based on an ARM-based Embedded System [1]. Hardware design includes hand-held terminal hardware and PC terminal. Hand-held terminal hardware consists of ARM9 board and nRF2401 module. ARM9 board is constituted by Samsung's S3C2440A, 7 inch TFT, 64M SDRAM, 64M NAND Flash, 2M NOR Flash

and four interfaces, etc. nRF2401 is a single-chip radio transceiver for the world wide 2.4 - 2.5 GHz ISM band.

The researchers Mr. Shekhar H. Bodake, Dr. G.U. Kharat, proposed a system, Design of Wireless Electric Board for Writing and Sketching Using ARM Based Embedded System [3]. In this paper authors explained that they have used ARM 7 board is used as main control unit of handheld unit which is interfaced with 7 inch touch screen with LCD & Zigbee model. Touch will be sensed by 7 inch touch screen, displayed using LCD which will be given to ARM 11, ARM 11 will pass it remote unit using Zigbee module.

2.2 Remote Unit

Remote unit also contains Raspberry Pi module, WIFI module. Signal sent by handheld unit will be received by remote unit by using WIFI module & will be given to the Raspberry Pi module, which will process the signal which is ready to display in enhanced form. Signal processed by remote unit can be displayed using either PC screen or projector which will be interfaced to the HDMI port of Raspberry Pi module using HDMI port driver.

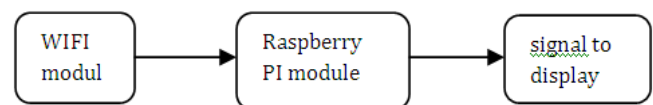


Fig -3: Remote Unit

The researchers Di Wu, Yang Zhang & Baoding Zhou proposed a system, Wireless Electric Board Based on an ARM-based Embedded System [1]. In this proposed work remote unit has only PC connected to projector to display. PC terminal software is used.

The researchers Mr. Shekhar H. Bodake, Dr. G.U. Kharat, proposed a system, Design of Wireless Electric Board for Writing and Sketching Using ARM Based Embedded System [3]. In which main module is the Raspberry Pi module, Zigbee module for communication. Signal sensed by Zigbee is given to Raspberry Pi. ARM 11 will process this signal & give it to projector which is connected to HDMI port of Raspberry Pi board.

The researchers Mrs. Mayuri Joshi*, Prof. Sunil.S. Morade proposed a system, Interactive Electronic Board Using ARM Processor [4]. They have used PC, projector to display enhanced signal. PC terminal software is installed

3. SOFTWARE

The researchers Mrs. Mayuri Joshi*, Prof. Sunil .S. Morade proposed a system, Interactive Electronic Board Using ARM Processor [4]. They have designed software based on Linux operating system for the handheld & remote both the units.

The researchers Di Wu, Yang Zhang & Baoding Zhou proposed a system, Wireless Electric Board Based on an ARM-based Embedded System [1].in their design software design includes handheld terminal software & PC terminal software. Handheld terminal software includes Boot loaders, Drivers, Kernel & Applications. PC terminal software includes Pc terminal handler & USB wireless receiver module driver.

The researchers Mr. Shekhar H. Bodake, Dr. G.U. Kharat, proposed a system, Design of Wireless Electric Board for Writing and Sketching Using ARM Based Embedded System [3]. They have used Linux operating system which helps for multitasking and also for writing the application software on the kernel.

3. CONCLUSIONS

Previously used systems are quietly costly than our proposed system as ARM 9 board are costly than Raspberry Pi. As Linux operating system is widely used for embedded applications, which hss easy access to develop applications as user want. Using Raspberry Pi on both sides will be ease for development of hardware & software.

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