Smart Home Automation for Several Disable Person

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Abstract— Smart home automation gives you access to control devices in your home for the independent life of older persons and persons with disabilities. So, to improve their quality of life, home based automation more accurately describes homes in which nearly everything is hooked up to a remotely controllable network. For example, your home's thermostat, bulbs, speakers, TVs, cameras, door locks, appliances, and more are all connected into a common system, which can be controlled from your smart phone or physical command. Through an extensive survey, our proposed system paper analyzes the building blocks of smart houses, with particular attention paid to the Physically disable people as an important component, by addressing the basic requirements of various sensors implemented from both research and clinical perspectives. In addition to this Our system uses GSM module to connect with hospital, firehouse and owner of the house simply just in case of any emergency. System will send the short message to all the station with the address details and the emergency details.

Keywords: ARM Cortex, Bluetooth, Slide switch, FLEX sensor, GSM, FAN, Lamp, Flame sensor, LCD

I. INTRODUCTION

The aim of this text is to propose a wireless remote that allows senior individuals with physical challenges, particularly, disabled and disabled individuals, to command their desired devices while not on the move to the closest management purpose. the first objective of a wise home is to reinforce comfort, energy saving, and security for the residents within the house. The good homes for individuals with special desires ought to be designed to meet varied necessities, whereas their management algorithms ought to be supported a tiny low variety of commands relevant to the specifics of the user's motions. In this paper, we have a tendency to gift a framework for many disable persons (BLIND, DUMB & DEAF and PHYSICALLY HANDICAPPED) that users having incapacity first choose their incapacity mode, for that we've provided 3 choice switches. 1st switch is for blind, second is for dumb deaf and third is for physically disabled. good phones, Slide switch, Flex device area unit employed by an individual with disabilities to manage the appliances and provides commands in their various modes. Suppose the user is chosen blind mode then commands area unit solely given through flex device and rest input devices can remains off. Similarly, for dumb deaf data input device is computer keyboard having slide switches in 2*2 matrix and for the last incapacity mode that is physically disabled and their input mode is golem based mostly voice management. The paper focuses on exploitation digital assistants to show appliances on and off. additionally, to the current alert system just in case of emergency or if fireplace is detected by flame device then the physical disable person can send message to totally different emergency station like firehouse, hospital and owner of the house.

II. MOTIVATION

The major concern of this research is to do a review of different existing smart home automation systems that are designed for handicaps and physically disabled persons. All over the time the main focus of home automation system is to provide the efficient, convenient, and safe ways for home inhabitants to access their homes. This Research will help in selection of a better and useful home automation system for the handicap peoples with features: -
1) Ease of use
2) Reduced Installation costs
3) Scalable & Expandable
4) Security

III. LITERATURE SURVEY

A. Home automation system using Android application.

In this system user send signal to Arduino board by using an android application and a Wireless module connected to that Arduino board receives these signals and further sent to Arduino for controlling of smart appliances using relay board. Arduino device is used as the controlling hub for this system. To perform the operations "ON" and "OFF" we use the relays. This system is useful for the peoples who could not move frequently from one place to another for the controlling of home appliances.

B. Home Automation System Using Voice Recognition Module HM2007.

The main feature of this system is that the peoples with hands disability can use this system by voice recognition this feature makes this a totally hands-free home automation system. This is mainly used system by handicaps and elders who are suffering from hands disability or those who cannot move their limbs frequently. This is an affordable, easy to use system. Initially the system takes input as voice signals and stores these voice signals in the systems memory. Then the user want to control a specific device then system again take an voice input and compare the input with the already saved directory and if matches then PIR sensor activated for checking the presence of any human if human presence test passes then it activates the relay that is responsible for to perform user intended operation.

C. Home Automation system based on Gesture Human Machine Interface (GHMI).

This system focuses on the hand gesture recognition algorithm and its corresponding UI. Hand gestures are determined by accelerometer and flex-sensor. The GHMI machine will act like a remote control for operating all the smart home appliances installed. These all activities are done using hand gestures instead of pushing buttons. This project mainly focuses on detection of various types of gestures made by hand using a number of sensors., to implement face recognition for authorization and unlocking

of doors, by using Wi-Fi as transmission module update the end user by sending an Email message.
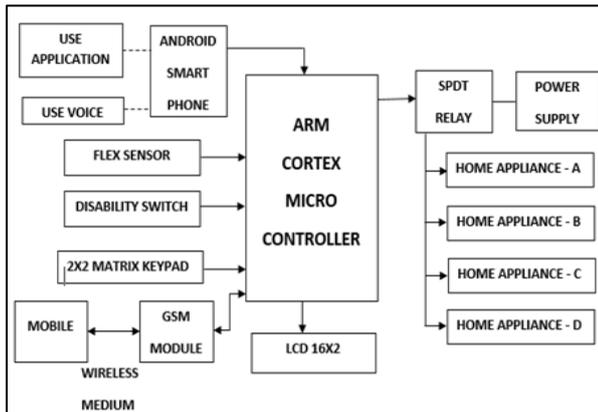
IV. BLOCK DIAGRAM

Fig. 4.1: Block diagram of smart home automation.

V. HARDWARE AND SOFTWARE

A. ARM Cortex

The ARM Cortex-M is a group of 32-bit RISC ARM processor cores licensed by Arm Holdings. These cores are optimized for low-cost and energy-efficient microcontrollers, which have been embedded in tens of billions of consumer devices.

B. Flex Senor

Flex sensors are usually available in two sizes. One is 2.2 inch and another is 4.5 inch. Although the sizes are different the basic function remains the same. They are also divided based on resistance. There are LOW resistance, MEDIUM resistance and HIGH resistance types. Choose the appropriate type depending on requirement. Here we are going to discuss 2.2inch Flex sensor that is FS-L-0055

C. Bluetooth

Bluetooth is a wireless technology standard used for exchanging data between fixed and mobile devices over short distances using short-wavelength UHF radio waves in the industrial, scientific and medical radio bands, from 2.400 to 2.485 GHz, and building personal area networks.

D. Slide Switch

Slide switches are mechanical switches using a slider that moves (slides) from the open (off) position to the closed (on) position. They allow control over current flow in a circuit without having to manually cut or splice wire.

E. LCD

16×2 LCD is named so because; it has 16 Columns and 2 Rows. There are a lot of combinations available like, 8×1, 8×2, 10×2, 16×1, etc. But the most used one is the 16*2 LCD; hence we are using it here.

F. GSM

The Global System for Mobile Communications is a standard developed by the European Telecommunications Standards Institute to describe the protocols for second-generation digital cellular networks used by mobile devices such as mobile phones and tablets.

G. SMS

The SMS (Short Message Service) [7, 16] control requires generally mobile communication systems. The proposed appliances are controlled by a main control board that has the capability to identify the specified number from which the SMS is sent, and therefore classify the mobile numbers that have the priority to access to the automated system. The GSM (Global System for Mobile communication) model is a hardware circuit involved by a SIM (Subscriber Identify Model) card that receives the text Massages.

H. ARM Keil

Keil MDK is the complete software development environment for a wide range of Arm Cortex-M based microcontroller devices includes the μVision IDE and debugger ,Arm C/C++ compiler and essential middleware components

I. Eagle

EAGLE is an electronic design automation software (EDA). Enabling printed circuit board (PCB) designers to seamlessly connect schematic diagrams, component placement, PCB routing and comprehensive library content.

J. Embedded C

Embedded C is a set of language extensions for the C programming language by the C Standards Committee to address commonality issues that exist between C extension for different embedded systems.

VI. CONCLUSION

After the study of assorted home mechanization frameworks accessible within the market that there square measure differing types of frameworks created for game folks accessible in advertise. All higher than processed frameworks square measure talked concerning and analyzed during this paper supported sure measurements. thanks to its presentation, straightforwardness, ease and unwavering quality home mechanization framework is creating its state of affairs in worldwide market, that day is not way once every home are going to be the shrewd home. The planned home automation system is devoted for aged, folks with disabilities, disabled persons. It consists of device supported by command buttons at the side of flex device associate degreed provided by a digital display for showing messages. The Slide switch board toggles the ON/OFF switches of the appliances by means that of relays.

VII. FUTURE SCOPE

In addition, we've got stressed the very fact that the longer-term sensible home can embrace humane technologies wherever vital technological elements ought to give human-friendly interaction with the user. The home-installed technology can any be homeward-bound toward custom-tailored style wherever the modular-type elements of the sensible house can meet the individual user's desires, emotional characteristics, and preferences.

VIII. ADVANTAGES

- Surveillance
- Smart heating/cooling
- Home assistant
- Save energy and money
- Health tracking
- Safety
- Kitchen Assistant

REFERENCES

[1] SaeedFaroom1, Muhammad NaumanAli2, Sheraz Yousaf3, Shamsa Umar Deen4, "Literature Review on Home Automation system for Physically disabled Peoples" in iCoMET 2018.

[2] Dimitar H. Stefanov, Senior Member, IEEE, Zeungnam Bien, Senior Member, IEEE, and Won-Chul Bang, Member, IEEE, "The Smart House for Older Persons and Persons with Physical Disabilities: Structure, Technology Arrangements, and Perspectives" in IEEE TRANSACTIONS ON NEURAL SYSTEMS AND REHABILITATION ENGINEERING, VOL. 12, NO. 2, JUNE 2004

[3] Prof. H. B. Shinde, Abhay Chaudhari, Prafull Chaure, Mayur Chandgude, "Smart home automation system using android application," in IRJET, vol. 04, April 2017.

[4] Krishna Rathi, Dinesh Patil, Sayli Bhavsar, Ketaki Jadhva, Prof.Saurabh V.Thakur, "Gesture human-machine interface (GHMI) in home automation," in IRJET,vol. 04, issue:06,june 2017.

[5] Gagan, "Iot based system for person with physical disability," in IJIREEICE, anshvol. 4, Special issue 2, April 2016.

[6] H. B. Stauffer, "Smart enabling system for home automation," IEEE Trans. Consum. Electron., vol. 37, pp. 29–35, May 1991.