ORIGINAL RESEARCH PAPER

Sournal or Research

IOT BASED HOME AUTOMATION SYSTEM WITH FACE RECOGNIZATION

Engineering

KEY WORDS: Gas sensor, Humidity sensor, IOT, Temperature sensor

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ABSTRACT

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IOT based home automation system with face reorganization is one of the best home automation system. This paper describes home automation with complete security to our home. This paper has three aspects. The first one is the monitoring of sensor values and controlling of Light and Fan. This system monitor the humidity sensor, temperature sensor, gas sensor values inside the house. This values are uploaded in to cloud and graphically displayed in home page screen. It can be also control on/off button in the home page screen. The user can control light and fan from long distance. A web site is designed for this purpose. It provides user name and password for each of the user. The user can login to his home page by using this user name and password. In the home page he can see all the sensor values graphically and on/off button for fan and light. The second aspect is the face reorganization part. Face reorganization done with the help of camera.. This section identifies the known and unknown person. If known person at the front door, the door opens automatically, and allows him enter house. Light and fan can work automatically by analyzing the climate condition. The busser gives an alarm if unknown comes in front of the door. The third aspect of this project is application of IOT. All the above actions such as Uploading Values of sensors light and fan control from long distance are done with the help of IOT.

I. INTRODUCTION

Now a day's smart home technology grows rapidly by a lot of good ideas introducing day by day. Mainly all these smart home technologies concentrated in energy saving .Now a days the use of energy is very high so that controlling of its use is very important. IOT based home automation system with face reorganization introduces new idea in domotics systems. Wi-Fi is often used for remote monitoring and control of house devices. It is remotely monitored and controlled by IOT Smart home is commonly referred to a home where the devices automatically or manually controlled with the help of electronics. It may also be connected to cloud. It can be seen as a system which uses smart phones personal computer to control, monitor or interact with the appliances of house. It reduces the human effort. This system monitors temperature, humidity, gas values inside the home and display it webpage. The user can monitor electronic devices like fan and light by sitting anywhere. Just a button on the home page click he can control these devices from long distance.

Face reorganization section is a software application for identifying and verifying a person from a digital image or a video frame from a video sourse.one of the way to do this is by comparing selected facial features from the image or face database. It is commonly used in security systems .The camera is placed front door of house. This paper using a PIR sensor and camera system for identifying presence of person .The persons image take by the camera is compared with data base image. If known person at front door. The door opens automatically. Allow him to enter house. Light and fan work automatically work .If unknown person comes in front of the door .Then the house members can take sudden action.

II. RELATED WORK

A lot of researches are going on the field of home automation system.All researches are mainly concentrated in energy savings. And home security Integrated cloud based smart home management system [1] is the complete home automation system. With the help of this system we can reduce the effort of community management staff. This system can control more than one home at same time and control all electronics devices inside the home .So that it will reduce the energy consumption inside the home .Mainly energy saving is the main aim of this paper. Typical smart home systems contains single home and various sensors and accumulators smart home management system collects information from wired or wireless connection between different system and home controller system with the help of IOT and cloud platform home automation system can control more than one home at same time. The collected values can be seen from long distance with the help of website by using user name and password. The user can control all the electronics devices in homes like light fan, fridge etc. With the help of sensors he can analyze the gas values humidity temperature inside the home so he can control the movement of curtain by analyzing the climate condition and he can control electronics devices inside the home. The main aim of this system is the complete home automation. With the help of touch panel the user can control all devices inside the home from long distance. IOT have major role in this case with the help of internet all values are uploaded into internet. With the help of touch panel and internet the user can easily enter his home page and control all devices.

III. PROPOSED SYSTEM

IOT based home automation system with face recognition is an advanced home automation system. This paper presents an innovative access control system, based on human detection. This Decreases false automatic door system actions and increasing the security applications. The proposed system for Smart Home management is the extension of building automation. This system involves the control and automation of light and fan inside the house. The proposed system architecture is divided in to two. Arduino uno part and Raspberry pi part. All sensors and appliances are connected arduino uno by jumper wires. Ardiuno send and home these collected sensor values to Raspberry Pi unit. The values collected by Raspberry Pi are uploaded to internet. The block diagram for sensor part is shown below figure 1.



FIGURE 3 PROPOSED SYSTEM FOR SENSOR PART

The second part of home management system is Raspberry pi unit. It acts as a mini computer inside the house. The values collected from sensors are directly uploaded to internet for analyzing the user. The face reorganization is done by Raspberry pi unit with.

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Web camera is connected to Raspberry pi unit. It capture image of user and compares it with database image. And take a final decision the person is known or not. If known person comes the door will open automatically. The sensor analyzes the climate condition light and fan work automatically. The busser gives an alarm if unknown person comes in front of the door Fig 2 shows raspberry pi unit.



FIGURE 2 PROPOSED STSTEM ARCHITECTORES FOR RASPBERRY PLUNIT

With the help of IOT the user can control light and fan inside the home. The sensor values are displayed on the screen graphically. A website is designed for user. To analyze his home data each user provides a particular user name and password. The user can see his home data graphically in his home screen .In home page a button switch for light and fan. Just a button click he can control light and fan from long distance

The complete design of this paper is done with the help of Python, Open CV, JavaScript and Embedded C. The core part of the system is a Raspberry pi unit that acts as a minicomputer .This unit programed with the use of python language. Python is an easy to learn, powerful programming language. It has efficient high level data structures and a simple but effective approach to object oriented programming. Python is used for the complete coordination of project. The data from sensors and data from web camera system also collected and analyzed and send to cloud .It will done using Python programming. Complete program of Raspberry pi unit is done by using python programming

This system designs a website for user for login and analyzes his data's from the sensor of home. Normally website designing takes place with the help of dot net programing. In this project designing website that will takes place with the help of python and java script. In web site there is a login page. Selected user can login to home page by typing his password and user name. Then user can enter in to his home page .There user can see the complete graphical data of temperature humidity and gas values. There is a button for controlling light and fan inside the house. The programing of this sensors part will be taking place with use of Embedded C. Embedded C is the simple programming language. Arduino programing written using Embedded C.A face reorganization system is computer application capable of identifying or verifying a person from a digital image or a video frame from a video source. One of the ways to do this is by comparing selected facial features from the image and face database. It is typically used in security systems Face reorganization part is done with the help of Open CV. Open CV is an open source computer vision and machine learning software library. The entire

coordination of system taking place Python programming .Because the raspberry unit is the head of this project

IV. RESULT AND DISCUSSION

The IOT based home automation system with face reccognization have large range of application in the case of home security sysetm .Because it gives a complete security to our home with the help of camera system the camera catches images of person at front door .That image is compared with data base for taiking decision about that person is known or unknown .it Gives complete security to this system and prevent the entry of unknown person into the house The complete working model of system will be shown as below figure 4.



FIGURE 4 : COMPLETE WORKING MODEL OF SYSTEM

The user have his on user name and pasword for entering his home page for that here designing a small web page fig 5.the login page diagram will be shown as in figure 6.

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FIGURE 5: WEB PAGE



FIGURE 6: LOC

The user can see his home data in his home page .The temperature ,humidity ,gas values are displaced graphically in his home sceen.He can also controll light and fan inside the home with the help of button switch in the screen simply clicking that butten he can conrol these devices.and there occour a message allert in his home screen if unknown person come infront of his house.The figure 7 represents the home page.



FIGURE 7 HOME PAGE

IV. CONCLUSION AND FUTURE WORK

IOT based home automation system with face recognition is the advanced version of home automation system. Which is mainly concentrated with home security .This system gives a complete security to our house. Analyzing internal temperature humidity and gas values, and avoiding entry of unknown person to our home. So it is the best home automation system providing complete security to our home.

In this paper sensor values are uploaded to website up to date. The user can see these values from long distance. The home appliances like Light and fan control is done with the help of button switch from long distance. So the user can take sudden action if any false condition in his house. That is cooking gas leakage, fire, etc. This system provide complete security to home by avoiding enter of unknown person. The busser automatically works if unknown person comes in front of the door . The known person at front door .The door open automatically. Allow him enter house. Light and fan work automatically by analyzing the climate condition .his system prevent the entry of thieves or antisocial people inside the house. This system demonstrates home automation of single system. With the help of IOT plat form can design more than one house. Advanced Training applied in face reorganization Then the system identify more than five people at a time. And it will control more home appliances inside the home.

IOT based home automation system with face reorganization system is the best automation system. Then the paper will become more advanced .With the help of IOT and face reorganization part. IOT will be applicable for more than one house at a time. Advanced training will apply the face reorganization part will identify more persons. Here I concluded this home automation system is the best system ever seen in market.

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