Development of Security Device with Automation for Home Appliances

Moulya H C [1]
Dept. of ECE,
Rajeev Institute of Technology
Hassan, India

Hemalatha.H.C
Dept. of ECE,
Rajeev Institute of Technology
Hassan, India

Pooja G T[1]
Dept. of ECE,
Rajeev Institute of Technology
Hassan, India

Soundarya A J
Dept. of ECE,
Rajeev Institute of Technology
Hassan, India

Ravikiran H K[2]
[2]Assistant Professor
Dept. of ECE, Rajeev Institute of Technology
Hassan, India

Abstract **- Online innovation has improved radically in the previous decade. Therefore, innovation related to security has become a significant assistance to ensure our day by day life. Here, we propose a powerful security reliant on face acknowledgment framework (SoF). Specifically, we have built this framework to giving access into a home for confirmed patrons. The classifier is prepared by utilizing versatile learning technique. The preparation information's are first gathered from interpersonal organizations. The exactness of the classifier is steadily improved as the client begins utilizing the framework. An epic technique has been acquainted to improve the classifier model by human collaboration and internet based life. By utilizing a profound learning system - TensorFlow, it will be anything but difficult to reuse the structure to embrace with numerous gadgets and applications. As an extra to the framework work likewise moves in creating shrewd lighting framework and temperature controlled fan for saving the vitality has been implemented. Here we have built an IOT based Smart Energy Management framework where apparatuses like Fan and Bulb are begin controlled remotely dependent on temperature and illumination. These sources of info are utilized towards controlling the apparatuses keenly instead of simply turning on or off. Moreover the framework additionally continues figuring throughput the day power utilization of the machines which gives the client information on power being expended over some stretch of time.**

I. INTRODUCTION

Modernization has lead to a surprising increment in the quantity of violations, particularly burglary. In the report, the law requirement organizations all through the US indicated a general increment of 1.7 percent in the quantity of vicious wrongdoings, which are drawn out into the open for the initial a half year of 2015; and, burglary has been expanded by 1 percent from 311,936 cases in 2014. In this manner, Security frameworks have an essential job to defend individuals. It is important to have a vigorous framework which can recognize individuals and react distinctively dependent on their benefits. There are a few procedures to give security to shield the individuals. One such framework is face acknowledgment. It has been now utilized in numerous applications including ID issuance, law implementation, outskirt control, and numerous other business items. Home security has been a fundamental component in brilliant home framework and got a developing enthusiasm for late years. Different home security frameworks have been utilized in the market for some pre-intense organizations. Notwithstanding, face acknowledgment based security framework has pulled in light of significant level confirmation and strength for the adjustment in states of light or appearance or even in the halfway square of the face can be thought of.

A structure is proposed for computerization of lights and fans utilizing Raspberry pi with Internet of Things for keen homes. These days we're having computerization of each and every electrical gadget in our homes. Web of Things is the idea of fundamentally interfacing any gadget with an on and off change through the web. IOT is more than brilliant homes and associated apparatuses; in any case, it scales up to incorporate savvy urban communities with associated sensors. Utilizing Raspberry pi, the lights will consequently turn on and off as per the illumination. Temperature sensors will used to recognize the room temperature and turn on and off fans. Likewise having robotized and more intelligent framework in every day exercises have been pulled in i.e., mechanization of lights and fans control. IOT is the stage encourages forhaving such mechanization. These strategies permit to interface any gadget through Internet. In this work a viable mechanization of home apparatuses with powerful security framework will be given.

Utilizing IOT one can control apparatuses of their home by basically utilizing the web application from anyplace from the world. The application works constant, subsequently there is insignificant postponement. As a viable use lodging

apparatuses like lights are controlled alongside speed of fan. Many existing and settled home computerization frameworks have been founded on wired advancements generally, which doesn't utilize Internet of Things, which is excessively delayed in speed, and covers extremely short scope of separation. This was not an issue until the framework is arranged well ahead of time and introduced during the real development of the house.

II. METHODOLOGY

- To use raspberry pi for putting away codes and projects.
- To use webcam to catch the pictures of obscure individual and afterward caught pictures will be contrasted and the put away pictures in the database. In the event that the caught pictures won't coordinate the put away pictures in the database then the caught picture will be sent to the personal digital assistant (PDA) of the house proprietor with the goal that they can perceive the obscure individual.
- To actualize home computerization through IOT utilizing DHT11 sensors to distinguish the adjustments in temperature and control the speed of the fans and to work lights utilizing IOT.

III. IMPLEMENTATION

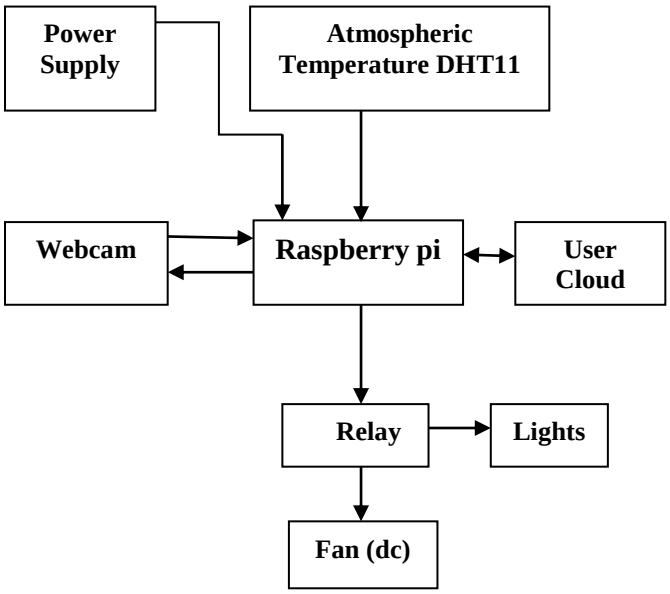

Fig 1: Block Diagram

Fig.1 shows, the image is captured using the webcam and the captured image is compared with the images stored in database and then the result in sent to the raspberry pi. If the captured image does not match with the stored image then the image is declared as unknown person and the image is sent to the intended user. The system has two processing nodes. The first one is from the camera node. By using a Raspberry Pi with web camera, Raspberry Pi will detect and realize the human face and compares it with the data stored in memory. Giving the access or send data to the server is based on if the system is able to detect and recognize the face with set-up confidence. If the confidence is low or unable to recognize the face, the Raspberry Pi will take a series of user's photo with different angles and expression to store in the cloud for training purpose. After the training task is done in the cloud, the updated version of the new model will download to the Raspberry Pi. The second process is the cloud node. Cloud node aimed to store the face data and send alerts to the owner so that they can know some unknown person has entered the house.

The home automation system is used for reducing the power consumption. A microprocessor called raspberry pi is used to control all the functions. Here we are going to sense the room temperature using DHT11 sensor. This sensed temperature is used for controlling the fan speed.If the temperature is more than 32 degree centigrade then fan rotates and if temperature is less than 32 degree centigrade then fan stops automatically. We display the temperature of a particular place from another place using cloud. For this, we are using DHT11 sensor and raspberry pi.

To control light power supply provides +5V input power to the Raspberry pi. Raspberry pi is used to store the program and the data from the program is stored in user cloud. From user cloud the data output is either high or low. If it is high the value is sent to relay. It takes +5V as input and provides 230V as output to lights. If the user cloud sends the output as low then relay is in off state.

IV. APPLICATIONS

- **Home security:** It can be applied in home security by the face recognition method.
- **ID verification:**The emerging use of face recognition is in ID verification services.Many companies working on this to provide this benefit to the banks and e-business.
- **Access and Security:** Facial biometrics with physical devices and object instead of using the pass codes, mobile phones and other consumer electronics will be accessed via owner's facial features.
- **Banking utilizing ATM:** The product can rapidly check a client.
- **Street light:** This technology can be used to control the street light throw smart switches in mobile.
- **Smart cities:** It can be applied for the outdoor lightning surveillance and long range wireless connectivity.
- **Smart switches:** The lights and Fan in the home con be controlled from anywhere in world through the smart switch in the mobile.
- **Lighting control system:** The term lightning control system refers to an intelligent network system.
- **Cooling systems:** By controlling the fan by the mobile the temperature of the home can be controlled.

V. ADVANTAGES

- There are many benefits to face recognition systems such as its convenience and social acceptability. All you need is your picture taken for it to work.
- Face acknowledgment is likewise one of the most economical biometric in the market and its cost should keep on going down.

- Crime Control: By the face acknowledgment strategy we can control the burglaries and murders.
- Convenience: The ability to control everything from your phones very convenient with our smart phone we can easily monitor our home.
- Saves Time : Since we are living in a very fast paced environment we don't even had a time to worry about our home, with home automation we can save time by going back to our home and check everything is in order.
- Saves Money: This is the biggest advantage of the home automation with the ability to control the light it saves resources and money.
- Controlling temperature: By controlling the fan through the phone and using of the DHT11 sensors we can control the temperature of the room.
- Saves electricity.
- Control home appliances from anywhere in the world.
- Quick response.
- Helps for safety purpose.

VI. CONCLUSION

The face location and acknowledgment with keen security framework are intended to have the option to catch a picture and send it to a cell phone. In this way, when a face is identified and perceived, the framework will inform the client by utilizing a cell phone. By including the face acknowledgment framework, individuals will be effectively perceived and a more secure city will be fabricated. Additionally, a potential arrangement is proposed to use PC vision in the IoT. Cell phone is used by the customer to acquire notices with the caught pictures.

We have presented the occasion of a home administration utilizing raspberry pi and web of things innovation. The framework is reasonable for remotely controlling the home machines. A savvy home framework coordinates different electrical apparatuses in a home. The mechanized mode makes life simpler for clients by complete robotization of vital machines with no human exertion.

VII. FUTURE SCOPE

- New methodologies based on different machine learning can be used for face recognition.
- Home appliances other than fan and light can be controlled.

VIII. RESULT

Cell phone application was coordinated with the proposed framework to create face acknowledgment for an individual territory. The webcam effectively catches the picture. From that point forward, face detection and recognition are actualized. The framework effectively recognized the appearances in the caught pictures. The calculation has been applied to all the pictures. This application performs three tasks, for example, catching pictures, face discovery and acknowledgment with sending warnings to the client's advanced cell.

Web of Things is an idea of fundamentally interfacing any gadget with an on and off change to the web. IOT is more than shrewd homes and associated applications; in any case, it scales up to incorporate savvy urban communities with associated sensors. Utilizing Raspberry pi the lights will consequently turn on and off as indicated by the amount of light. Temperature sensors will recognize the room temperature and turn on and off fans.

IX. REFERENCES

[1] Gupta, Ishita, VarshaPatil, ChaitaliKadam, and ShreyaDumbre. "Face detection and recognition using Raspberry Pi." In 2016 IEEE International WIE Conference on Electrical and Computer Engineering (WIECON-ECE), pp. 83-86. IEEE, 2016.

[2] Nguyen, Trung, Barth Lakshmanan, and Weihua Sheng. "A smart security system with face recognition." arXiv preprint arXiv:1812.09127 (2018).

[3] Kulkarni, B. P., Aniket V. Joshi, Vaibhav V. Jadhav, and Akshaykumar T. Dhamange. "IoT based home automation using Raspberry PI." International Journal of Innovative Studies in Sciences and Engineering Technology (IJISSET) 3, no. 4 (2017).

[4] Othman, Nashwan Adnan, and IlhanAydin. "A face recognition method in the Internet of Things for security applications in smart homes and cities." In 2018 6th International Istanbul Smart Grids and Cities Congress and Fair (ICSG), pp. 20-24. IEEE, 2018.

[5] Neha Malik1 "Literature Review on Home Automation System" International Journal of Advanced Research in Computer and Communication EngineeringISO 3297:2007 Certified Vol. 6, Issue 3, March 2017.

[6] Hassanpour, Vahid, SedigheRajabi, ZeinabShayan, Zahra Hafezi, and Mohammad Mehdi Arefi. "Low-cost home automation using arduino and modbus protocol." In 2017 5th International Conference on Control, Instrumentation, and Automation (ICCIA), pp. 284-289. IEEE, 2017.

[7] Morshed, NeazMd, G. M. Muid-Ur-Rahman, MdRezaulKarim, and Hasan U. Zaman. "Microcontroller based home automation system using Bluetooth, GSM, Wi-Fi and DTMF." In 2015 International Conference on Advances in Electrical Engineering (ICAEE), pp. 101-104.IEEE, 2015.