

AUTOMATIC CLASSROOM USING WEBCAM

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Abstract - Smart services are one of the most emerging technologies being used in the IoT era, which has widely changed the equipment into more intelligent, remotely accessible, and interconnected. This project is to provide a solution towards a problem related with a laziness of human being to control or to operate devices manually. Since, automation has been introduced in the world we are still using this on & off system in mostly. This to use our knowledge to recover our valuable time and energy in a certain way that the large area owners like auditorium, large hall, classroom etc.

1. INTRODUCTION

Welcome to world of smart automation using Raspberry pi! In this we will learn about how to harness the power of Raspberry, learn about automation and make your life uncomplicated and more efficient. From controlling light & appliances at monitoring environmental conditions, it provides us the endless possibility of creating a smart solution to modern problems.

This is to create an environment to give in a responsible price so that at least a classroom could be working in such a manner so that it would make a change in the area of electricity saving. As we are using Sensors and actuators are being utilized as a part of houses and workplaces, which are making our life more agreeable in a few areas. In a Classroom and being we have come up with a problem for an excessive and unnecessarily use of lights

and fans in college area as well as manually turning the appliance ON & OFF.

As we come into this of a project that can do this operate the appliances automatically and do it effectively so that it can therefore be used as an excellent purpose.

2. RASPBERRY PI

Raspberry pi: It's a microprocessor, it can do multiple tasks at a time. The operating system which Raspberry pi depends is Raspbian OS which is based on Linux. It is a little device that enables people to explore computing and to learn programming languages like Python. It is capable of doing things like browsing the internet, playing video, making spreadsheets, word-processing, playing games, etc.

It can't be replaced by a Raspberry pi and the reason could be

1. It can't do multiple tasks as a Raspberry pi can do
2. The processor or operating system in Raspberry pi is Linux that's why it's faster than microcontroller
3. It doesn't need any type of connection as in microcontroller use a separate module
4. There are 4 USB ports to connect any other appliances like mouse, keyboard and other hardware whereas microcontroller has only one port which is for power supply

3. PROPOSED MODEL

Step1) Firstly, We install it in the room to be made automated, in this case it would be our classroom.

Step2) Then the next thing which will happen is that the camera will click the real-time image of the place.

Step3) Then it will compare with the data stored in Open CV that the image is real or not, is it a foreign object or any the living being commonly found in a classroom like Pencil Box, Bucket, Benches, Table, Books, Water Bottle and Bags etc.

Step4) Then this data provide us the data to Detect the face and Conclude it as a real face. It will place the box of a detection symbol on the Basis of the python program given in the Algorithm.

Step5) As and when the comparison is made and if there are any changes found in the image as compare to the original image, then it sends the signal to that part of the sensor where there is a difference in the comparison.

Step6) Once this process is done then Raspberry Pi will decide the position of the Detection box is in which plane Or Position. This will deiced that which relay is to be operated near the Detection Box.

Step7)The arduino Uno which is attached to the lcd screen will detect which row is on if all the rows are on it will show the calculated load in that row.

4. EVALUATION

At first trial we did notice a problem in the project as such a tripping of circuit ON/OFF. A single switch for the whole classroom all the appliances are being operated. In this situation we have noticed 2 problems (1) Load on the relay become high as it can only 500watt and all the appliances are in total is above 1000watt. Then we have to evaluate and resolve the algorithm as such we divide the frame into 3 in horizontallyAs from the frame measurement it is divided in the following table:-

ROW	ALGORITHM
R1	If $y < 135$
R2	If $y > 136$ & $y < 280$
R3	If $y > 286$

For the frame measurement algorithm $(x,y),((x+w),(y+h))$ as we have modified.

Our system, is nearly 75% accurate and it is achieved such that if there is any person's face in front of the cameras then also the camera can detect it.

5.IMPLEMENTATION

Working model of the project is shown n fig a

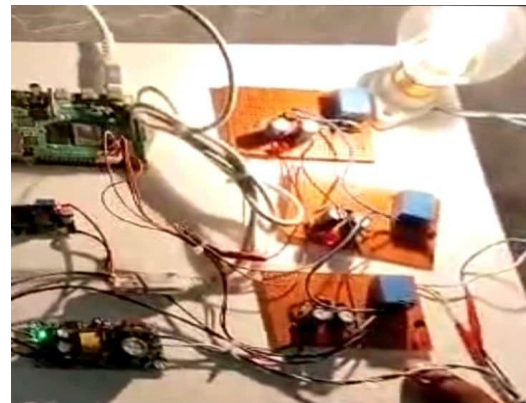


Fig a. Working Model

6. CONCLUSION

This project here by conclude that for the detection of the face and actuating the IOT using Raspberry, this develop or evaluate this in different situation and different room like Home, Movie Theater, Shopping Mall, Stadium, Etc. This system successful and we claim that the system works 80% Accuracy. Considering that the developed system is just a simple prototype and much more work has to be implemented in order to create a final working device. . Several sectors where there is a need for improvement are the size and cost of the device, energy resources, and the communication range. This can be develop in a box or a cabinet and this will provide an external protection .

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