

IOT Smart Lobby – A Welcoming Music System For Detection and Reorganization of People Entry

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Abstract—with every enhancement in Internet in terms of speed and bandwidth, IOT (Internet Of things) is taking the market on a new node and knocking the door with new opportunities of inventions . Many a times a lot of peoplere main nervous and worried, so the concept of welcome music can console them and admires the beauty in their daily schedule. This paper talks about welcoming music for either smart home or shops which can be automated based on IOT

.When someone enters the home or any shop the music will be played automatically to greet the person or the customer by detecting their movement .It creates a smooth and soothing atmosphere in the room with an audio automation . In this model, where number of appliances are used and connected by wires to avoid range issue.

Keywords—IOT, welcome music, smart home, soothing, atmosphere, automation .

I. INTRODUCTION

Homes enhance the approach to life of individuals through the availability of various services, sensible home or machine-driven home comes into image. It aims at providing leisure and simple work. The internet of things, or IoT, is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. In this new growing era where smart home automation are taking into shape, the technology for setting up music system to welcome or greet someone when they first enters the room has impressed a lot of people. So, effort has been taken to provide a reliable and beautiful atmosphere. Smart home automation is an integration of smart devices transforming them into comprehensive networks that collaborate with great efficacy and minimizing human intervention.

II. LITERATURE SURVEY

The internet of things or IOT , refers to the billions of physical devices around the world that are now connected to the internet ,all collecting and sharing data . Now we are in digital world , here many works are done in fast and accurate way. IOT helps people live and work smarter, as well as gain complete control over their lives.

In here IOT based smart lobby proposes an efficient implementation for IOT to monitor and automation system and it uses the portable device as a user in face. This project aims at controlling the music system via laptop by using PIR sensor as a motion detector and Arduino Uno. Here

algorithm is embedded in Arduino Uno .After detecting the motion, action follows as per steps of algorithm , the song will play which is store in the SD card. This paper also describes how to provide fully smart environment condition monitoring by various sensors for providing necessary data to automatically detection. The system hardware consist of SD card module, PIR sensor ,transistor, breadboard , speaker and Arduino Uno.

III. HARDWARE SPECIFICATIONS

1. **Arduino Uno R3** - The Arduino Uno R3 is a microcontroller board based on a removable, dual-inline-package (DIP) ATmega328 AVR microcontroller. It has 20 digital input/output pins (of which 6 can be used as PWM outputs and 6 can be used as analog inputs). Programs can be loaded on to it from the easy-to use Arduino computer program.

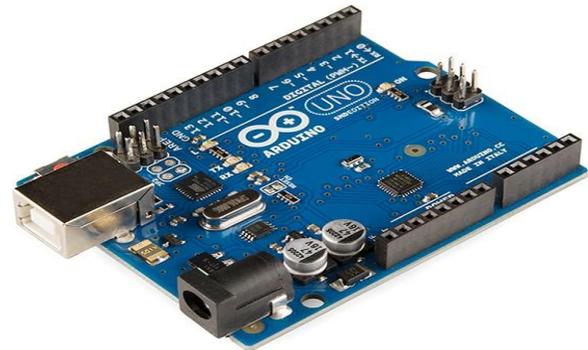


Fig. 1. Arduino Uno

2. **SD Card Module** - A Micro SD card supports SPI Communication. An SD Card Module or a Micro SD Card Adapter is a simple board which facilitates connection between a Micro SD card and a Microcontroller like Arduino.

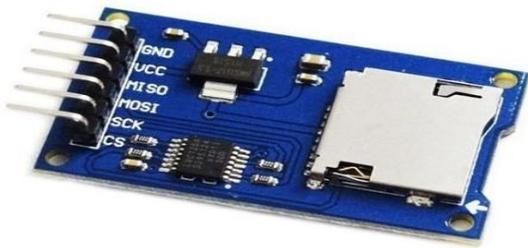


Fig. 2. SD Card Module

3. **PIR Sensor** - PIR sensors allow you to sense motion, almost always used to detect whether a human has moved in or out of the sensors range. They are small, inexpensive, low-power, easy to use and don't wear out. They are often referred to as PIR, "Passive Infrared", "Pyroelectric", or "IRmotion" sensors.



Fig. 3. PIR Sensor

4. **Micro SD Card** – Micro SD is a type of removable flash memory card used for storing information.



Fig. 4. Micro SD Card

5. **BD 139 Transistor** - BD139 is a Bipolar NPN transistor, it is mounted in the SOT-32 plastic package. It is designed for audio amplifier and driver utilizing

complementary circuits. BD139 has a gain value of 40 to 160, which determine the amplification capacity of a transistor.

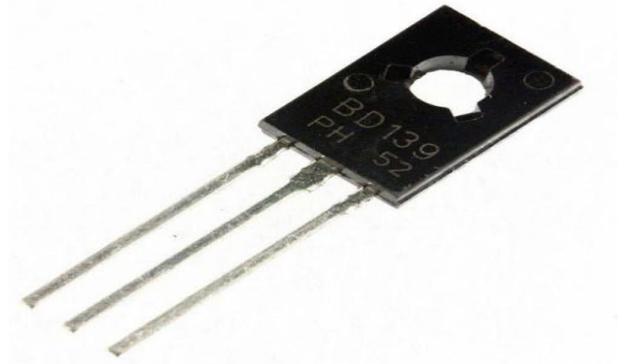


Fig. 5. BD 139 Transistor

6. **Jumper Wire** - Jumper Wire is an electrical wire, or group of them in a cable, with a connector or pin at each end, which is normally used to interconnect the components of a breadboard or other prototype or test circuit, internally or with other equipment or components, without soldering.

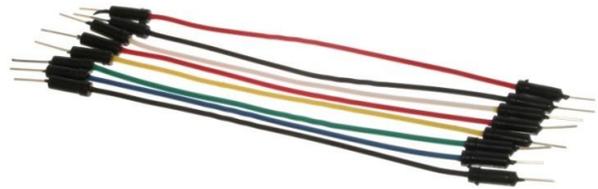


Fig. 6. Jumper Wire

7. **Bread Board** - A breadboard is a rectangular plastic board with a bunch of tiny holes in it. These holes let you easily insert electronic components to prototype an electronic circuit.

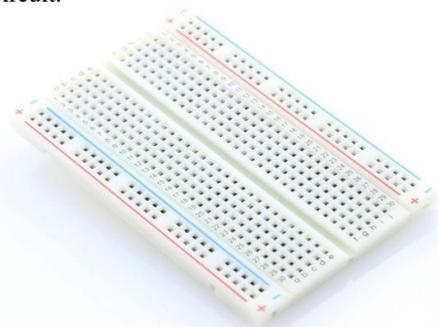


Fig. 7. Bread Board

8. **Speaker** - A maximum of 5V speaker is suitable for this project.



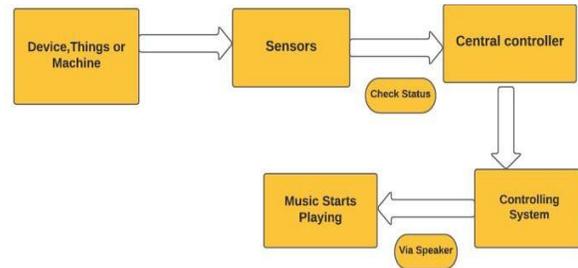
Fig. 8. Speaker

IV. PROPOSED FRAMEWORK

- It works based on infrared radiation. It means PIR sensor is made of a pyroelectric sensor, which is able to detect different levels of infrared radiation. Once there is infrared radiation from the human body particle with temperature, focusing on the optical system causes the pyroelectric device to generate sudden electrical signal, when that signal detects then it starts playing “Welcome music”.
- At first, when some infrared radiation is captured by PIR sensor then it send a signal to “Arduino Uno” the embedded code is running in it and it sends signals to both ‘BD139’ transistor and ‘Micro SD card module’, then selected music is playing at speaker from SD card.
- Pin no 1 is being attached to Arduino uno board of GND.
- PIR sensors all pins are attached with Arduino uno board. Like – output pin is attached with pin no 7 of Arduino uno
- Speaker’s 1st pin is attached with 3.3v pin of Arduino uno board and 2nd pin is connected with BD139 transistor’s 2nd pin.
- Arduino uno board’s pin no- 5,13,11,12 are connected with SD card.

V. RESULT ANALYSIS

In this IOT based project, We able to change the music via laptop as per our requirement. we embedded an code in Arduino Uno and connect it with SD card module and PIR sensor which use as motion detector. This device follows the following working path



At first motion is detected by PIR sensor then it send the signal to Arduino Uno after that work is progressed as per code .This device take a step forward to home automation. This device will take a big role in corporate office, ATM, Bank vault which we discussed in future scope.

VI. FUTURE SCOPE

1. Nowadays, the covid situation is arrived all over the world. Government apply many rules to stop further spreading of the Covid-19 virus. These days government create many covid vaccination centers but normal people doesn’t maintain any queue and social distancing so by the help of this device,we can easily take a note if people are maintaining the queue and enter the vaccination center one after the another.
2. We can use this device in doctor’s chamber because if anyone enters the room it starts the alert music for every person,we can easily calculate how many people present in doctor’s chamber and make the next appointment wait outside the room.
3. In ATM counter,maintaining privacy is must,so one person dealing with ATM machine,once he is opening the door, the welcoming music play automatically applying this process we can say that our privacy is in safe hands.
4. We can use this concept into the bank’s vault so if any person trespass into the bank’s vault at night a alarm automatically and send a message automatically to the bank manager’s phone.

VII. CONCLUSION

This chapter proposed a framework for smart music system with motion detector in a smart building, shops, hospital. The main purpose to propose this framework is to provide emotional communication or alert the person one or the either way. It create a deep and positive emotional experience., increase concentration and attention, stave off fatigue and for those sensors and microcontrollers can be designed in such a manner such that music get ON/OFF based on the motion in a room. In future IOT based projects will be smarter and faster. It would be extended to the large-scale environment such as colleges, offices and factories etc.

VIII. REFERENCES

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