Pet Feeder using IOT

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Abstract - This paper provides a solution to minimize the problems faced by the pet feeders in today's world. The paper is written on the basis of prepared and tested model. Most of the people love to keep a pet at their homes, also now a days pets have become more burdens for people having pets. The owners have lot of stress when it comes to feed the pet. In past few years variety of pet feeder devices are present, unfortunately they are unable to solve all the problems. Project aims to solve the various problems that are caused using this pet feeder using Internet of things. IOT Pet feeder use a BOLT WIFI MODULE and with Arduino interfaced, using servo motor, and some hardware. Code is uploaded to the ARDUNIO IDE AND BOLT CLOUD to perform operations like rotating servo motor. This device is controlled using BOLT application in the mobile phone. The signal is sent to the BOLT WIFI MODULE using bolt application through bolt cloud. The door of the pet feeder device opens as soon as motor starts to rotate, and the food drops through the hole into the bowl. And this helps pet to receive regular amounts of food on a click of a button.

Keywords – IoT, Arduino UNO, Servo Motor, Electrical.

I. INTRODUCTION

IoT Pet feeder using internet of things is the newest technology to feed pet which can help the person having pets especially when they are away from their Place or their pet. When the pet owner is not present at home, this pet feeder can help them feed the pet with this device. This device is made to reduce the problems faced by pet owners [1]. This IoT Pet feeder is one of the pet feeders that will be operated using a mobile app which is connected to a wifi network. This device will help to collect pet food into the bowl on a click of a button. Being a pet lover, one should know that the pets also need a suitable food schedule. If owner is away from home knowingly or unknowingly or want to worry less about feeding its pet, this device can help him feed the pet from anywhere on time. IOT pet feeder can solve problems like, making sure that the pet can be fed easily by just sitting at one place with just a click of button. IoT pet feeder is helpful in solving problems, and makes life of pet and as well as owner by providing the easy way to feed the pets on time and the pet can easily eat its food on time. Similarly, many more pet feeding devices could be made to operate as an automatic machine which will allow its users to use it according to the needs with the help of this device via Internet [2].

Arduino UNO

Arduino UNO is an open hardware development board that can be used to design and build devices that interact with the real world. Arduino contain a number of different parts and interfaces together on a single circuit board shows Fig 1.

Fig 1. ARDUINO-UNO

Bolt Wifi Module

Connects to the Bolt Cloud out of the box. Comes with GPIO, ADC and UART. I2C and SPI via Arduino Adaptor. Based on ESP 8266 Module and has indicator LEDs for WiFi and Internet connectivity [3]. Bolt wifi module helps to

connect the devices to the internet Shows Fig 2.

Fig 2. Bolt Wi-Fi module

Servo Motor
These are electronic components, linear/rotatory actuators which can rotate and push parts of the devices [4]. These are used for specific velocity and to accelerate shows Fig 3.

Fig 3. Servo motor

Power Supply
It is an electrical device that generates electric power and converts electric current from a source to voltage or current or frequency to power the load shows Fig 4.

Fig 4. Power-Supply

II. SOFTWARE APPLICATIONS

Arduino IDE
The Arduino IDE was utilized. The Arduino board may be programmed considerably more easily and quickly with this IDE. It comes with a variety of libraries that make connecting various components to the Arduino board much easier [5]. It also simplifies the operation of such components shows Fig 5.
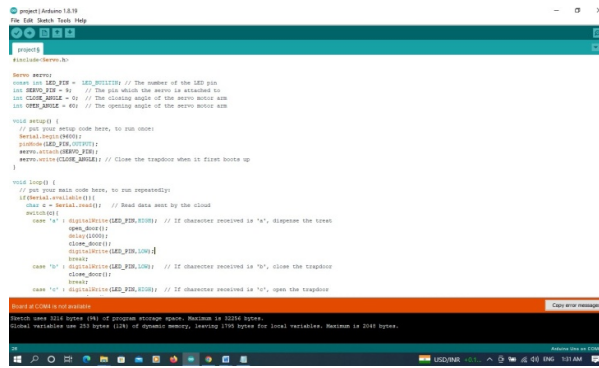
Fig 5. Arduino IDE

Bolt Cloud

Bolt Cloud helps you to build your IoT devices, dump your code, and configure on the desktop [5]. This helps the user to monitor, control and setup the device, and once the setup is done download the bolt application Shows Fig 6.
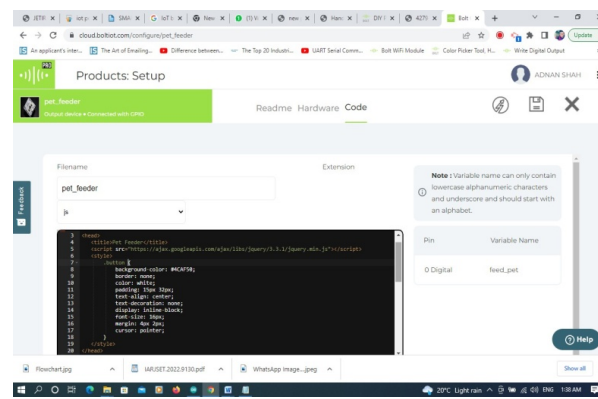

Fig 6. Bolt Cloud

III. DESIGN ANALYSIS & RESULT

IOT Pet Feeder build using bolt wifi module helps to feed pet when the pet owner is away from the pet or out of station. This can be done with one click of a button from any place in Bolt application in mobile [6-9]. This is very easy to use. The device has a bowl placed in it which helps in collecting dispensed pet food from it, servo is used for opening and closing the dispenser door. Basically, the output current offered by bolt wifi module is 5V which is required for servo motors to operate [10]. Servo motors will need proper 5V or sometimes more volts to drive them. The logic behind this action is that when the user clicks the button in Bolt application with the help of internet to operate the servo is connected to the door which helps in dispensing the food shows Fig 7.
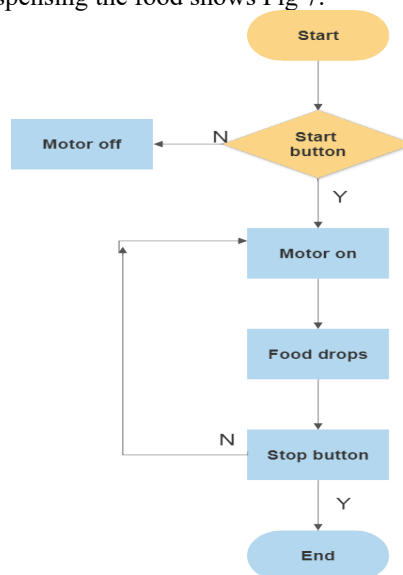

Fig 7. Flow Chart

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Steps for Execution

Bolt module can be interfaced with Arduino UNO by connecting the TX pin of Bolt wifi module to RX pin of the Arduino & the RX pin of Bolt wifi module to TX pin of the arduino [11]. Now do the connections using the jumper cables from the Servo motor to the Arduino by following the instructions given below:

- arduino <-- --> Servo motor
- 5V <-- -- Red Wire
- GND <-- -- Black Wire
- Pin 9 -- --> White Wire

Write code for Arduino board using the Arduino IDE software and upload it to the Arduino UNO. And upload the front-end code on Bolt cloud. Do not forget to associate the page with your created product. Open your cloud dashboard and open the product associated with your Bolt [12]. Add the pet food which is dry from the top of the device and close the top. Keep the device in a place where your pet cannot knock it down and keep a feeding bowl under the door [13]. Finally press the feed me button and see pet food being dispensed from the device shows Fig 8.
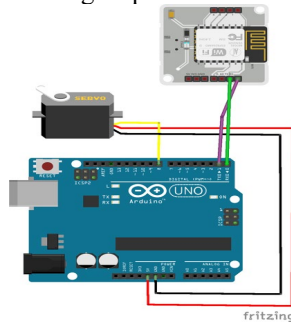

Fig 8. Circuit Diagram

IV. RESULT

The proposed work is completely illustrated in below Fig 9
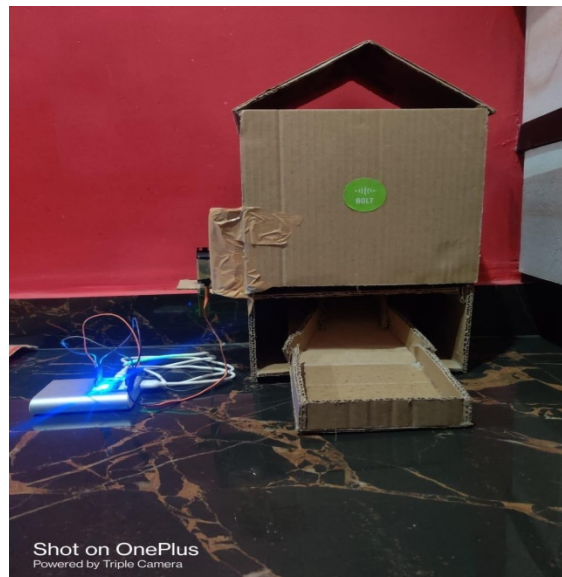

Fig 9. Pet Feeder

V. CONCLUSION

There is an attractive interaction between humans and physical devices and objects and also itis increasing attention. This idea of making pet feeding device by including IOT technology provides amazing results in the field of technology in future. This proposed device is really helpful for all the pet lovers. Results of this device not only shows the improvement of the pet monitor system present in the IOT technology, also meets the demand of all pet owners. IOT can have operational methods in much better ways and also can come up with great ways to connect devices, also there might be the even complete clean approach. In future, this can be fully integrated with other pet care devices which may include

litter boxes, pet camera and many more. This integration will meet the needs of the owners can be and the health, monitor, and entertainment topics for pets can be covered. In future, we can centralize on the study of the IOT gateway and long-distance detection of the pets.

VI.   FUTURE ENHANCEMENTS

This IOT pet feeder can be improved by adding other operations to perform. We can add many more functions to this IOT device by including a camera which can actually help to keep an eye on moments of the pet and to check if it has eaten its food. And adding a sensor can make it even better so that the food gets dispensed when the pet goes near to the device.

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