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Title AUTOMATIC PET FEEDING USING GOOGLE ASSISTANT AND NODE MCU

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## Automatic Pet Feeding using Google Assistant and Node MCU

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### Abstract

Automation is increasing a lot now a days. Every system works automatically with the help of machines and makes the work very easy. Automation helps to reduce the work to the person, and it can increase the efficiency of the system. Feeding of pets is one of the best interactions between humans and pets. Pets are also considered as one of the persons in the family. Due to busy lives and some problems many people will forget to feed their pets on time. This can cause malnutrition to pets. Now we are going to develop a system that can automatically dispense the food in a bowl within a time by using the Google assistant. We will utilise a food container, a servo motor, an LCD with an I2C module, and a Node MCU ESP8266 in this project. This enables us to feed our pet using Google Assistant from anywhere in the world and maintain their health.

**Keywords:** NODE MCU, Servo Motor, LCD Display, Google Assistant.

### Introduction

Pets must be provided with food and water time to time, but because of the busy life we may sometimes find ourselves away from home and may not be able to feed our pet. Systems for distributing animal feed are becoming increasingly popular in modern society and are utilised extensively in both smaller-scale residential and larger-scale commercial applications. Systems for distributing animal feed can take many different shapes and offer a variety of controls over how the feed is actually distributed. There are numerous ways to achieve the same goal, some of which are more effective than others, whether it be through a manual system, an automatic system on a timer, or a sensor-based system. When it comes to feed systems, the use of sensors is a significant bonus because it entirely automates the procedure while allowing for little human intervention. Whether it's a dog, cat, hamster, or any other kind of pet, these creatures need to be well-cared for and fed, thus many users are seeking

for a system that can run independently as well as one that is aesthetically pleasing. These animals can experience stress from not receiving the right amounts of food or from missing meals. This terrible reality causes malnutrition and eventually leads to the abandonment of these creatures. Moreover, food frequently comes in an airtight bag that pet owners may fail to entirely close after feeding their animals. With the aid of effective technological use and routine pet feeding, we attempted to address some of the issues raised above in this research.

### Literature Survey

Pets require special consideration and upkeep. This chore is more difficult than it used to be because of our hectic lifestyle today. The creation, design, and implementation of a smart pet system are the aims of this effort. A natural and intuitive methodology must be used to approach the interaction between humans and physical devices and technologies in

the actual world, which is receiving more attention. According to this notion, an increasing demand has been made for living well. Thus, the key concern these days is how to grow pets simply. This study looks at how the Internet of Things can improve how people connect with their pets by using compute, communication, and control technologies. The improvement of location awareness in pets is the focus of this effort, which also aims to make it easier for pet owners to train their animals to manage their activity and eating. Our study not only outlines the major advancements made to the pet monitoring system using Internet of Things concepts, but it also satisfies the needs of pet owners who need to go to work without worrying about their pets. The goal is to make it possible for pet owners to automate routine tasks like feeding and monitoring. Owners of pets will have enhanced comfort and peace of mind with the implementation of smart pet houses, especially while leaving pets alone. The project's primary goal is to distribute food and handle the pets' daily dietary needs. As a result, it can help you select how much food to give your pet each day so that obesity is kept under control. Machines can automate independently, but the Internet of Things (IoT) allows for the addition of monitoring and regulating features. As the world becomes more interconnected, the IoT builds a vast network of devices that routinely exchange data. In addition to occurring in businesses and organisations on a global scale, this interconnectedness also occurs in private households. Pet owners can use this device to remotely feed their animals using Google Assistant, which is available on the majority of Android smart phones. Pet owners can use this device to remotely feed their animals using Google Assistant, which is available on the majority of Android smart phones. The user must use a command on their smart phone, such as "Ok Google" or "Feed my Pet," to feed their pet. With the use of this command, the machine will carry out the following action. To let the pet know that the food has been delivered, a buzzer sound is produced once the instruction is performed. IoT, Google Assistant, and smartphones are important terms.

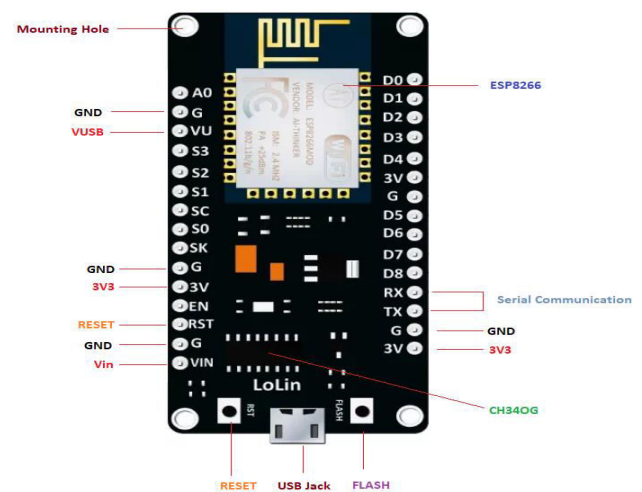
## Software and Hardware Requirements

### Hardware Requirements

- Node MCU
- Servo Motor
- LCD Display

#### Node MCU

A development board with open-source firmware designed specifically for Internet of Things (IoT) applications is called Node MCU. It has hardware based on the ESP-12 module and firmware that runs on the ESP8266 Wi-Fi SoC from ESPRESS IF Systems. The ESP-12E module, which has the ESP8266 chip with Tensilica Xtensa 32-bit LX106 RISC microprocessor, is included with the NODEMCU ESP8266 development board. This microprocessor has an adjustable clock frequency range of 80 MHz to 160 MHz and supports RTOS. NODEMCU can store data and programmes in its 4MB of Flash memory and 128 KB of RAM. It is perfect for IoT projects due to its high processing power, built-in Wi-Fi and Bluetooth, and Deep Sleep Operating capabilities. You can power NODEMCU with a Micro USB jack and a VIN pin (External Supply Pin). The interfaces UART, SPI, and I2C are supported. Both buttons on the ESP8266 NODEMCU are present. The Reset button, designated RST, is on the top left corner and is used, obviously, to reset the ESP8266 chip. The download button is located in the bottom left corner and is used to update firmware.



#### Servo Motor

Specifically, a DC motor, a position sensor device, a gear assembly, and a control

circuit make up a DC servo motor. The pieces of RC servo motors are depicted in the below image, where a small DC motor is used to drive loads at precise speeds and positions. The field winding and armature winding of DC servo motors typically have their own dedicated DC sources. Either the field current or armature current can be controlled to archive the control.



#### ▪ LCD Display

There are several uses for liquid crystal display screens, an electrical display module. A 16\*2 LCD display is a very fundamental module that is frequently included into many different devices and circuits. A 16\*2 LCD has two lines with a maximum of 16 characters per line. Each character on this LCD is presented using a 5 by 7 pixel matrix. The 224 various characters and symbols that can be displayed on the 16 \* 2 intelligent alphanumeric dot matrix displays. The Command and Data registers are two of the LCD's registers.



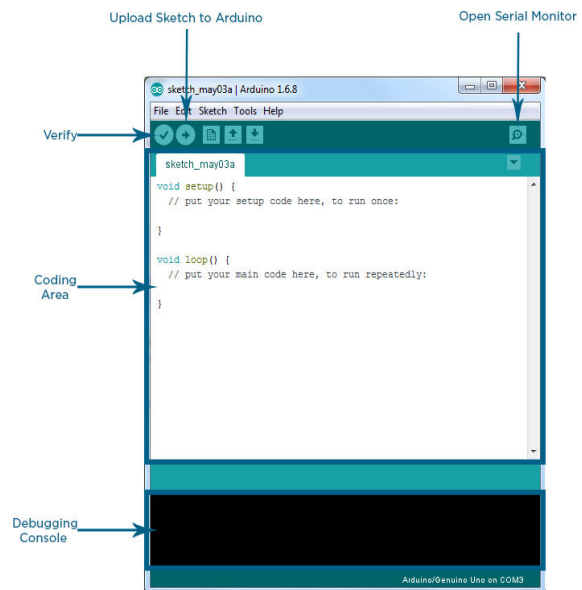
#### Software Requirements

- Aurdino IDE
- Adafruit IO

- IFTTT

- Aurdino IDE

The open-source Arduino IDE programme is primarily used for authoring and compiling code into Arduino modules. Because it is an official Aurdino software, code compilation is made so simple that even a layperson with no prior technical expertise can start to learn.



- Adafruit IO

With the aid of the open data platform Adafruit IO, you can gather, display, and examine real-time data in the cloud. We can upload, display, and track your data online using Adafruit IO, which makes our project IoT-capable. With Adafruit IO, we can develop amazing Internet of Things apps, read sensor data, and control motors remotely.

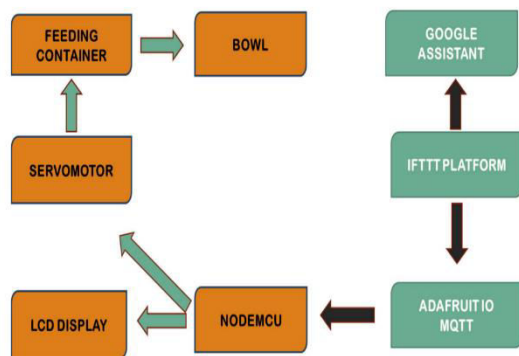
- IFTTT

IFTTT, sometimes known as "If This Then That," is a free online tool for building applets—chains of straightforward conditional statements. Users of IFTTT can build triggers and carry out actions in response to the triggers. To build a trigger when we speak a particular sentence into Google Assistant, we are using IFTTT. To link the Google Assistant with Adafruit IO, we must build an applet.

## Proposed Work

Here we introduce a system “automatic pet feeding system using google assistant and node MCU” which helps the feeder when he is not nearby pet. The system feeds the pet by receiving the instructions from the feeder given through google assistant with help of node MCU and NTP servers and then buzzer sound is generated to know the pet that the food is dispensed.

## Methodology



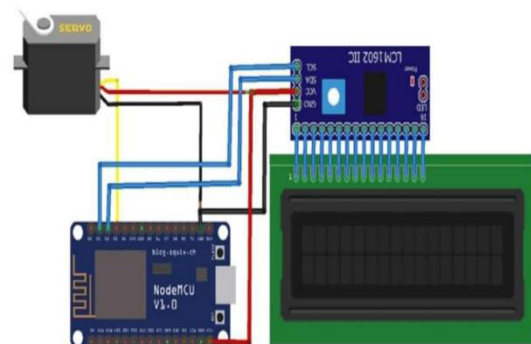
## Working Procedure

This is a description of the automatic pet feeding system's operational process using Google Assistant and Node MCU. The procedures for creating an automatic pet feeding system utilising Google Assistant and Node MCU are as follows..

1. To operate this project, a Node MCU ESP8266 serves as the primary controller. A servo motor opens and closes the feeding container, a bowl disperses the food, and a 16\*2 LCD screen shows the update and feeding time.
2. In the feeding container food is stored by the feeder which is attached to the stand at the height of 200cm away from the dispense bowl.
3. When feed command is received by the NODE MCU, it activates the Servo motor which is used to close and open the feeding container to dispense the food in the bowl.
4. In this instance, we're using two different platforms. Adafruit IO is a "open data platform that enables live data aggregation, visualisation, and analysis on the cloud."

5. IFTTT, sometimes known as "If This Then That," is a free web service that enables users to build applets—chains of straightforward conditional statements—to activate the Google Assistant. To link the Google Assistant with Adafruit IO, we must build an applet.
6. To feed the animal, we must say "Google, go. feed my pet". When you say the sentence, Google Assistant will identify it and reply, "Alright done."
7. Node MCU automatically sends the triggers to the Servomotor which opens the lid of the food container and dispenses the food into bowl and now buzzer sound is generated and servomotor closes the lid if we give command “Ok Google. Complete feeding” to the google assistant.

## Circuit Diagram



## Conclusion

The suggested model helps pet owners get through challenges with feeding their animals. Google Assistant may be used to operate the device using straightforward commands. Effective pet feeding is possible. Finally we conclude that, the implementation of automatic pet feeding system using Node MCU and google assistant is safe and secure way of feeding pets. The system is completely automatic and provides the food to the pet on time without any delay.

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