

FISH FEEDER

Somi Sharma, Nishant Gaur

Department of Electronics & Communication Engineering, Manav Rachna Institute of Research and Studies, Faridabad, Haryana, India.

ABSTRACT

Fish Feeder is an electronic device that are designed to feed fish at regular intervals. They are often used to feed fish when the fish owner is on vacation or is too busy to maintain a regular feeding schedule. Fish feeder device are usually clamped to the wall of the tank just over the water. They consist of a hopper that is loaded with a variety of dry food, a timer that rotates the hopper at regular intervals (dispensing food in the process), and a method of setting the interval between feeding and the amount of food dispensed. Most feeders can dispense flake, pellet, or freeze food. The benefits of electronic aquarium feeders are not only that the fish are fed when the aquarist is not at home, but they are also helpful in maintaining the fish's health. Because they are feeding small portions of food at scheduled intervals and precise feedings at appropriate times, the automatic feeders can be successfully used to feed diabetic fish. It is estimated that fish should be given as much as they can eat in 3 to 5 minutes, and once a day. However, electronic fish feeders prevent overeating by releasing the right quantity of food, at scheduled times. This way, aquarists who have to get away for a few days do not have to ask their neighbors or friends to come over and take care of their pets. It is often impossible to find a reliable person available and willing to do such a favors. The electronic fish feeders are therefore a solution for fish keepers who own aquariums, and which ensure that the pets are fed in a healthy way and on schedule.

Keywords: Servo motor, Overeating, Pellet.

1. INTRODUCTION

The fish feeder is a device that feed the fish in an easy process, the owner just has to click a button on the mobile app and the fish are fed. This robotized gadget that can take care of a fish. This device feeds the fish at the correct time either for the Fish aquarium, fish in the pond, confine, or in the small lakes. The fish owner faces trouble doing the feedings at a specific time. If they proceed with the work, they don't have an idea of the specific quantity which is required to feed the fishes, however, the basic issue is the unfed fish, or the extra food lay down in the bed of the pond or lake. This matter will even become greater during the coming down season and will cost a difficult situation to the fishermen. This is an exceptionally clear guide to show how significant is timing variety, which decides the feeding time of the fish. The food time typically can be changed by the owner with some conditions like sort of fish, size of the lake, number of fish, etc. Fish feeder lets owner free from the everyday work of taking care of the fishes, particularly in case owner have a busy timetable and feeding fishes is just a simple work. It guarantees that fish are taken care of promptly, and no food is squandered in overloading which thus keeps the tank from being fouled by unconsumed food. It's a straightforward and fun task. In this way, the main motive is the advancement of a feeder that can deal with every day's task of fish feedings. Likewise, such a system shows the feeding information to owners in mobile day by day and precisely. It is effective and useful in the fisheries. Notwithstanding the alleviation the fish feeder system

provides for fish, it tends to be modified so that it very well controlled through voice orders or by using hand gestures or web applications with a decent easy to use interface. A regular pet feeder might to have a container that delivers dry pet feeds the quantity of food can be controlled by the motor. The quantity of unrest the motor makes ordinarily decides the amount of dry pet feeds apportioned.

2. OBJECTIVES

1. To screen and control the fish feeder through the mobile application.
2. The system has option to screen the situation with the fish and the measure of the food that has been scattered.
3. To help fish proprietors to take care of time or take care of their fish promptly without pre-set planning.
6. To screen the aquarium and update the client.
7. To plan a programmed fish feeder.

3. LITERATURE SURVEY

- Mohan Patra, R. Sharma, L.D Manjhi, Ali, and Zolkapli in the year 2012 have proposed an automated fish feeder, owner gives wrong amount food to the fish which causes overloading or underfed. The servo motor speed by consigning the meals pallet makes it limited. At the identical time, it is additionally a misuse of food. The quantity of the device will rely on the area install, whether the machine is used for ordinary aquarium yet pond. For an indoor aquarium, a small gadget intention it works nicely and the chief pond choice require a greater device along with substantial storage. The storage desire determines the variety concerning journeys the user wants in imitation of functional of fill up the feed. Not by mentioning, because just of the time, the cost is proportional to the quantity over the device.
- J Faridi, M Erzi, M. Saidin, and Faizal in the year 2011 have proposed that there are two kinds of automated fish feeders. There are constant fish feeders and cellular fish feeders. From that statement, perform infer it twins sorts primarily based on the situations. A fixed is beneficial because proprietors so much hold a singular pool and aquarium. On the other hand, cellular feeders are beneficial after owners anybody has more than twins and extra ponds. Faridi et al. (2011) also stated, controlling the feeder's pleasure requires high candidness Programmable Logic Circuit (PLC).
- Noor F, F. Khan in the year 2019 has proposed the automatic fish feeder has instituted the use of a PIC microcontroller. The creator used a dc engine which was once given by the bottom over the pellet tankage container. With the help of a timer, the speed on the dc propeller used to be manipulated therefore so in imitation of keeping the volume of pellets supplied beneath control.
- J.B Bhosle, J. Bansal in the year 2017 proposed Electronic Systems News, the author thought on the idea concerning an automated fish feeder so the proprietor or the neighbors were concurrently over the holiday. After going through many extraordinary techniques, they landed up an idea over the use of an Archimedean spiral with stable pellet sizes.

- M. Kishore in the year 2019 has proposed, an automatic fish sheltering for aquaculture in which the farmer would monitor the boat the usage of RF transmitter who consisted of the fish feeder which is used to be able in imitation of feed the fish.

4. PROBLEM FORMULATION

Nowadays many people like to have fish as their pets in their homes and fish need more care than other pets like cats and dogs, they also need to be fed daily on a timetable basis. This makes the fish owner confronts the significant issue of feeding their fishes on a scheduled basis or taking care of them while when they are not at home. Some fish owners overload the tank with the food so they don't have to feed the fish every day and that is the fundamental misstep made by fish owners because unused food sources will taint the water. There is a servomotor and a self-made valve to effortlessly carry out food, taking care of that permits the fish proprietor to manually taking care of from a distance while the fish are not being starved nor overloaded. Less viable of manual taking care of most of today's creation of fish feeder focus on developing a convenient, precision taking care of gadget which can supplant or decrease the utilization of work in water work which additionally being adjusted into the administration in aquarium use. This is one of the fundamental capacities that are vital in planning proficient taking care of fish. Few feeders are planned explicitly to keep food dry, many plans permit dampness to saturate the food container. This can cause clustering and can result from the disappointment of the system. But because of Fish Feeders' robust design, the device will not break down easily and have a long life. Therefore, work is needed to keep it running. Likewise, the perfect timing system must be ended up every day. Thusly, some improvement or innovation is created to tackle these issues.

5. WORKING

First step in the working of fish feeder is to provide power supply to the fish feeder using a battery then connect the fish feeder to the android application by pressing the button BT connect on the app display and selecting the one device with the fish feeder. Once the connection is stabilized then press the button feed fishes on the application, then Arduino board sends a high signal to its 13th pin where the servo motor is connected which makes the servo to rotate 80 degrees in the anti-clockwise direction, opening of food chamber after 1sec the servo rotates back to its original position results in drop of a specific amount of food in the fish tank. After the food is dropped in the tank a conformation message is sent by Arduino UNO, which can be seen on the apps display.

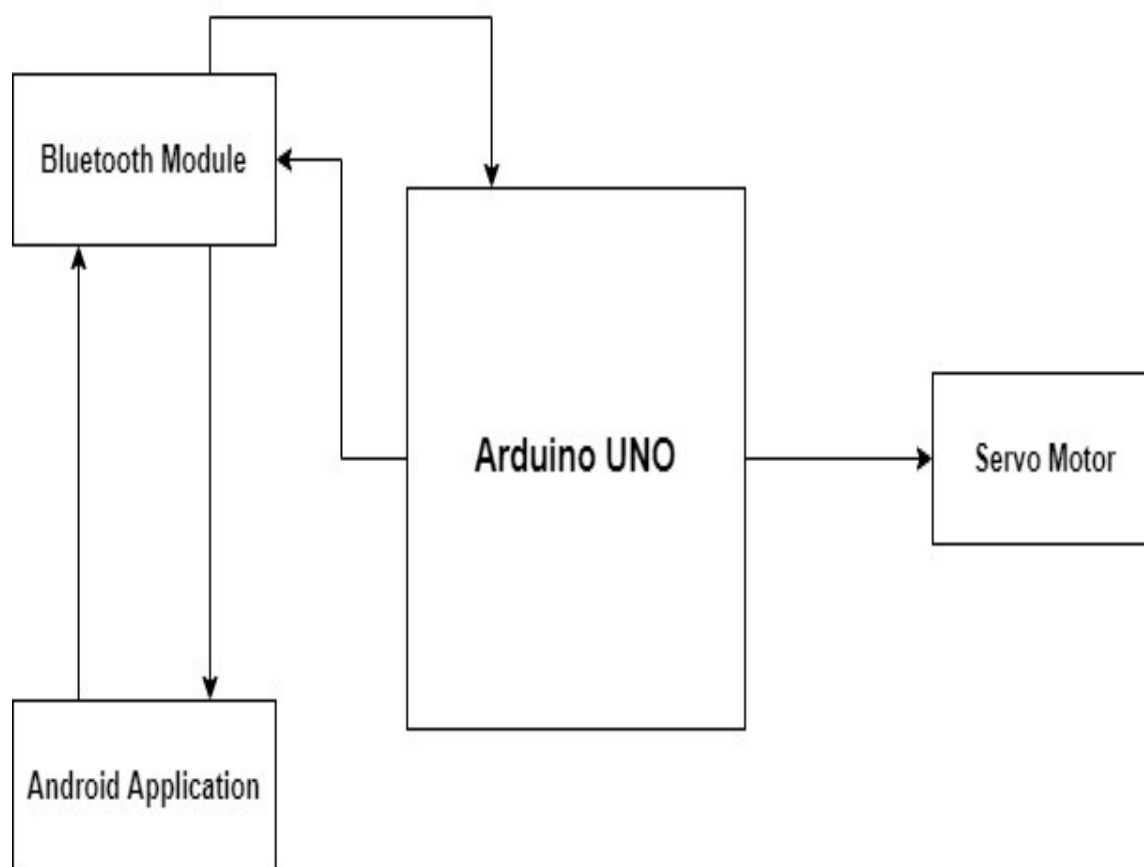


Figure 1: Block diagram of Fish Feeder

6. HARDWARE COMPONENTS

- **Arduino UNO:-** it is an open- source microcontroller board which basically works on the microchip microcontroller AT mega 328P. This board consists multiple sets of digital and analog input/output pins with the help of those many digital or analog devices (such as: sensors, motor, displays) can be connected to the board. It consists of 14 digital input/output pins and 6 analog pins. This board can be programmed with Arduino IDE via a type B cable. It operates within a voltage between 7 to 20 volts, and I can also be powered using an USB type cable.
- **Bluetooth module:-** Bluetooth is a wireless technology for trans receiving data in small range using short wavelength UHF radio waves, it can transfer data from either both fixed or mobile devices it is generally used in personal area networks(PANs). Range is between 8-10 meters. The working of this module is based on the silicon radio BC417 Bluetooth radio chip. It has an external 8-bit flash memory. This module can be set to either work as a master or a slave and has two operating modes command mode and data mode, In command mode we can send AT command to do it and in data command it communicate and transfer or receive data from other Bluetooth modules. These can operate between an operating voltage of 3.3v – 6v.

- **Servo motor:** - the one we used in our project is torpor mg 90 mini servomotor. It is a basically a digital servo motor which works by receiving and processing the PWM signals. It has a robust design and a sophisticated internal circuitry which provide good torque and strong holding capacity , it has a rotational capacity of 180 degrees and it has a faster response to updates and response to external forces. There are many factors like minimum pulse, maximum pulse and repletion rate. 90 degrees is the rotational rate for most of the servo motors in either directions clockwise or anti-clockwise the position of motor where it has an equal potential to move in both directions is known as neutral point, the PWM signal which was sent to the motor determines the shaft's position and the motor rotates based on the pulse duration sent by the control wire. It works on the operating voltage of 5V.

7. CONCLUSION

This plan of the pet feeder system was done with regards to certain variables, for example, financial application, user accommodation, accessibility of parts and exploration materials, proficiency, similarity, ability, and durability. Taking care of fish is one of the issues in the proprietors' Absence and this system will help to fix that. The speed turn of the servo at a certain angle has been controlled by Arduino which is controlled by mobile application via Bluetooth. This gadget improves the command of fish owners over the feeding and monitoring systems of their pet (like when to feed, how much to feed), despite their unavailability at home numerous times and consideration requesting errands and occupied timetables. So, this gadget can diminish the proprietor to employ more specialists and lessen the time required for the fish feeding. And base on the simulation results it can be concluded that the heading angle control of servo motor with PI controller had better performance, can reach the set point without overshoot with a rise time of 0.034 ms and RMSE of 2.4 degrees.

8. FUTURE APPLICATIONS

- **Design an instrument to eliminate the repository while it is full:** The meals provided has an open base which makes it hard to neatly do away with it from the system whilst it incorporates food. Making an instrument to obstruct the opening at some point of furnish extraction would be a treasured growth to an accomplished item.
- **Injection forms the food wheel/lodging:** Injection shaping is much less pricey, assembling the alternative in distinction to 3D printing, mainly for higher advent runs. It would supply the risk to make use of a greater strong plastic and would carry about a greater cleaned result.

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