Next Generation Fish Feeder Automation Control by Smartphone

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ABSTRACT - This paper shows the implementation of a fish feeder automation system using the HC05 BLUETOOTH MODULE. This fish feeder automation system is only for indoor purpose or where the range of HC05 BLUETOOTH MODULE is exist. This automation system is combination of both mechanical and electrical system. Subsequently, this research was proposed to design an automatic fish feeder system using AVR MICRO-CONTROLLER, which is heart of ARDUINO unit. The ARDUINO unit places a very important role in controlling this automation system. When HC05 BLUETOOTH MODULE receive a signal from the user, then according to that signal module will send an signal to the ARDUINO unit and then this unit take an suitable action. The ARDUINO unit sends a PWM signal to the DC motor, when signal is receive the shaft of the DC MOTOR rotate .The rotation speed of the shaft is depend on the duty cycle of the PWM signal. The shaft is connected to a mechanism, this mechanism will take care of the feeding to the fish .This automation can be used in AQUACULTURE and also reduces the labor cost.

Keywords-- Hc05 Bluetooth Module, AVR Microcontroller, Arduino, PWM, Dc Motor and Aquaculture

I.   INTRODUCTION

Thia Automation is defined as self-regulating control of equipment, systems or processes without human intervention. These Ideas of automation hold favor with those technologists and lazy people who do not want to do tough work   particularly manual operations. The scientific wizardry of   achieving   automations undoubtedly makes   it   apparent that the day will surely   come when   all of the things will be automatically operated. It is true that most fish can miss a meal without being   in any danger. Some fishes can easily go a week or more without food if they are healthy. As fish owners, it will determine how they are concerned about their fish while being   away   for   an   extended period of time.   In addition, having to design and manufacture a   fish feeder that can greatly assist fish farmers   and   the productivity of the farm can help them operate   more without bearing too much of a cost on other things. The design project is that it will be also   very inconvenient on the part of the owners when on vacation and for those living a busy lifestyle because some sensitive and expensive fish normally need to be fed once or twice a day. Thus, the purpose of the research paper was to provide the fish owners a device that can actually   feed   their fish regularly whenever they are away or on a vacation for a

while. These reasons led to the invention creation of an automatic fish feeder. The   majority of aquarium fish are omnivores, meaning they will eat both meat and vegetables. To keep the fish healthy, they must be fed with a varied diet that includes all types of foods. Here are some popular omnivores, with notes about their preferred diet.

- Angelfish –Accepts all types of foods, but prefers live foods.
- Goldfish – Accepts all types of foods, but diet should   not be too high in protein.
- Guppy – Accepts all types of   foods, but prefers mosquito larvae.
- Rams – Accepts flakes, pellets and live foods.
- Koi – Accepts flakes, pellet and   live   foods

When a user want to feed the food to the fish without the motion of the body .Then this automation is very helpful for that. Sometimes due to fever ,cold and cough and other body related problem .Person have to stay at bed for long time period or the motion of the body is not up to the extend . But by this research paper the person or the user can feed food to the fish .The user only need an mobile which support bluetooth .Firstly, the user have paired both the bluetooth i.e. bluetooth of mobile and the hc05 bluetooth module which is an very easy task for that user .Now user have to installed any Arduino bluetooth app from store which is free of cost .Then user have to set

command to some button which he want to be easier for hand. This is also not a difficult task and this is only one time installation process after that user is free to use this automation. The main component of this automation system is mobile, HC05 Bluetooth Module, Arduino Uno and DC Motor. Command is receive to the module, this pre-defined command is store in the arduino unit .Arduino unit send an pulse width modulation (PWM) signal. The PWM signal is important to maintain the speed of the dc motor. The mechanical system is consisting of two discs like structure.

One disc is made up of 12 sections and connected to dc motor. When dc motor rotate each section is rotates this section contain fish food.

This disc is placed above other disc .The another bottom   disc is contain a cavity. The bottom disc which contains a cavity is made to be steady. When the upper disc section meets with bottom disc cavity because of rotation of dc motor then the   food is delivered to the fish. In short, on every touch of the button the food is delivered to the fish.
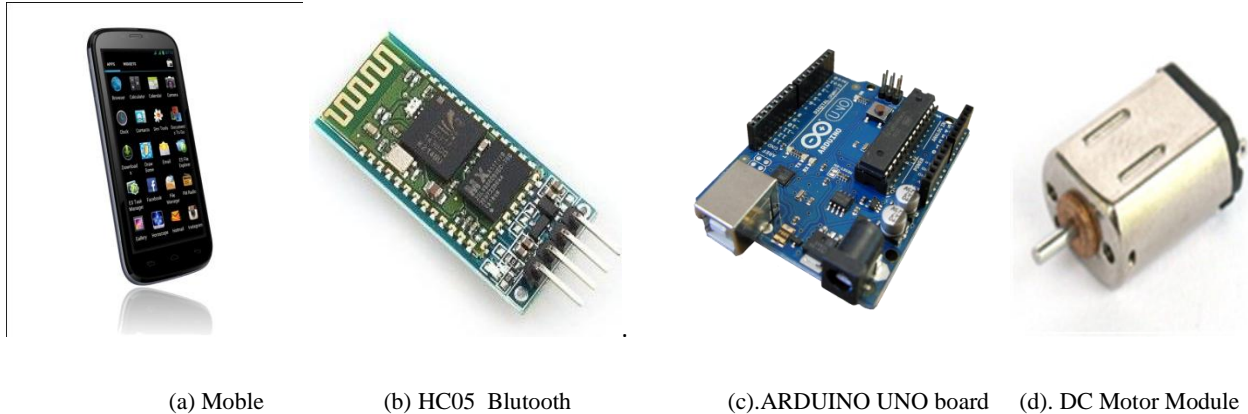

(a) Moble   (b) HC05 Blutooth   (c).ARDUINO UNO board   (d). DC Motor Module

Fig. 1 Used devices in Proposed Work System

Fig.2 working process model []

Fig.3   Working Hardware modal

II.   PROPOSED METHODOLOGY

An HC-05 module is an easy to use Bluetooth SPP (Serial Port Protocol) module, designed for transparent wireless serial connection setup. Serial port Bluetooth module is fully qualified Bluetooth V2.0+EDR (Enhanced Data Rate) 3Mbps Modulation with complete 2.4GHz radio transceiver and baseband. It uses CSR Blue core 04-External single chip Bluetooth system with CMOS technology and with AFH (Adaptive Frequency Hopping Feature).

HC-05 embedded Bluetooth serial communication module (can be short for module) has two work modes: order-response work mode and automatic connection work mode. And there are three work roles (Master, Slave and Loopback) at the automatic connection work mode.
Slave (slave role) - Passive connection

Slave-Loop-Passive connection, receive the remote Bluetooth master device data and
Send it back to the master device
Master (master role) - Inquire the near SPP Bluetooth slave device, build connection with it positively, and build up the

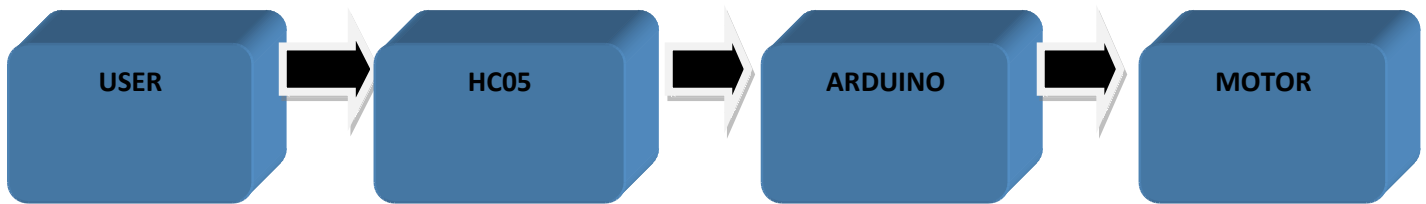transparent data transmission between Master and slave device.

Fig.4. Block Diagram of Automatic Fish Feeder System

III. CONCLUSION AND FUTURE SCOPE

All Conclusions In this paper we have presented a fish feeder automation system. This automation system is combination of HC05 Bluetooth Module and Arduino. .The HC05 Bluetooth Module receives the command from the user mobile .If this command matches with the Pre-defined command which is stored in the ARDUINO unit. The ARDUINO unit gives a PWM signal for the rotation of the disc. Rotation of each section which is in the disc resulting in feeding of food to the fish

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