Pet feeding Dispenser using Arduino and GSM Technology

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Abstract - *This paper focuses on the topic where the pet owners who can feed their pet without their presence by sending a message to the system through their cell phone. GSM technology is used in this system to receive a message from the pet owner. The solenoid valve and the servo motor will be activated when the message is received by the system. This will rotate the servo motor from which the food will be transported and for the water to be free-flowing, the solenoid valve will be open. Once the feeding process is done the owner will receive a message. This concept is for the family who have a busy schedule and are not able to feed their pet.*

***Key Words*: GSM Technology, Micro-controller, Arduino.**

1.INTRODUCTION

Now a days, with a busy schedule and modern up and coming technologies people tend to forget some of their basic responsibilities which is the main cause of trouble. One of the main responsibilities is taking care of their pet. There are many reasons for having a pet, for their appearance, loyalty, their different personalities and many more. Having a pet at home is a huge responsibility and commitment which does not go to waste and you're always ingratitude, as having a pet serves entertainment, a company at home and also distraction from a busy, stressful life. Due to the busy life pet owners tend to forget to feed their pets and they come on the bottom list of their priorities. This paper comes in action which dispenses food and water through Arduino based model which activates through GSM Technology. This machine communicates via SMS (Short Message Service). With the cellular phone readily available economically for transmitting messages, can be able to look over their pets in terms of feeding. With GSM Technology, it can control the system from anywhere at any time. With a simple text message, the owner will be able to dispense the amount of food and water. This will give the owner less work with no worries and more time.

2. METHODOLOGY

The block diagram shown is the actual determination of how the system and machine work. The design stage sums up pilot ideas for the materials and the layouts to be considered. Simulations on schematics. The fabrication process of building the device and PCB (Printed Circuit Board) composition. Testing Stage for testing the device mounted, for complete evaluation and analysis of the system.

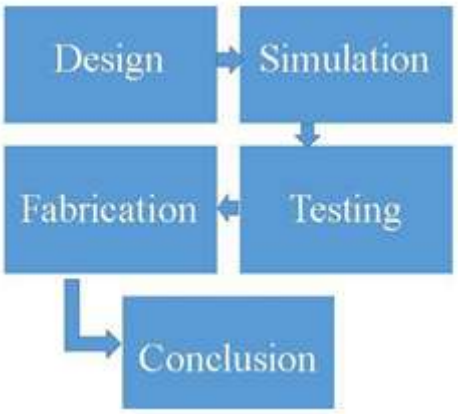

Fig-1: Block Diagram

The second block diagram describes the concept of operation. When the power is supplied to the system, a message will be sent to the owner saying the machine is initialized and ready to work. When the owner sends the message to the system, the device will trigger the servo motor and the solenoid valve. After the completion of task, the machine will notify the owner and a text will be sent notifying that the pet feeding was successful. The servo motors uses +5V supply from ATmega328 and solenoid is connected to the power supply with transistor serving as a switch.

ATmega328 consist of 23 pins; 6 analog I/O pins, 14 digital I/O pins, 16 MHz crystal oscillator, a power input jack, a reset button and a USB type-B connection. GSM shield which is an additional component functioning as a component accepting SMS from the user. It contains SIM900D, fused input power, a module buffered UART, a manual power switch, and SIM holder, enabling the machine to perform as a basic phone, i.e. able to send and receive a message from other phone users. This device is placed on top of Atmega328 which is connected through the RX and TX pins.

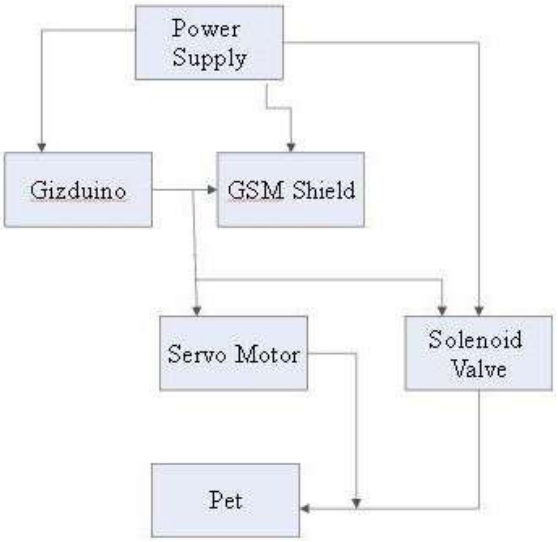

Fig-2: Concept of Operation

Servo Motors has three wires viz. power, ground and signal. The red wire is connected to +5V pin on micro- controller., the brown is connected to the ground pin and finally, the orange is signal wire connected to pin on micro-controller, defined by the code to trigger the

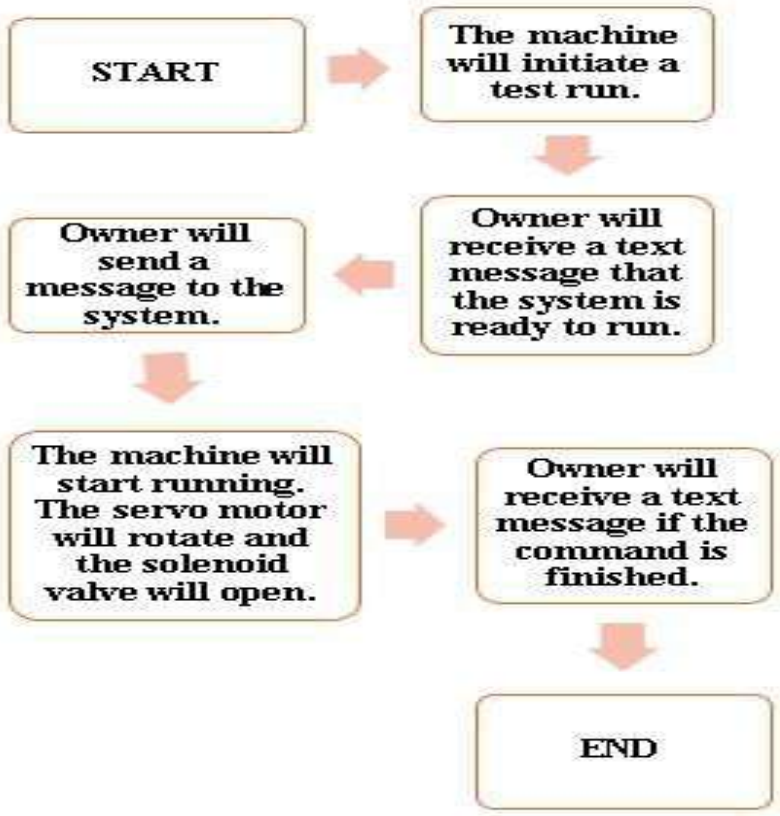

Fig-3: Operation

instrument. There's a latch at the bottom of the food container which will rotate the servo motor from which the feeds will be dispensed. This latch will open at 180 degrees. Thus letting the food out on to the bowl or plate. There are two wires on the solenoid valve which will perform its function by using micro-controller. When for a certain amount of time you set the pin high, will manipulate the instrument temporarily, but will require a different voltage while using a solenoid.

In this situation, a transistor will be used. The TIP120 will perform as a bridge when connected to the circuit, this will switch a small amount of voltage from micro-controller to a larger voltage of the solenoid. The diode connected allows the current to flow in one direction, this prevents the micro-controller to burn. As it consumes the current when solenoid is turned off until it dissipates. The bottle filled with clean water is attached to the solenoid, which will control the flow of water. When the device is activated, the spring connected to it contracts, opening the tube, allowing the flow of water, and the water is has served its purpose the tube will be closed and the water will stop flowing.

2. RESULTS

Area of concern-Start up. The prototype starts with an initial run and goes to its initial position. But a pilot run is required before its actual use.

Area of concern – Notifications. It is notified to the owner of the start and end of feeding task. It does not notify if there is no signal in the area, or the card has zero load balance.

Area of concern- Feeding process. Fixed open and closing of drop rate of food and water. It may cause an unnecessary mess while feeding.

3. CONCLUSIONS

This paper presents pet feeding dispenser using Arduino and GSM Technology. With the use of cellular phone an SMS can be sent on when to feed the pet. As this will maintain a healthy diet of their pets. This is essential in every home especially to people who are busy and are too occupied, are often away to work or are in school. With proper time management and depending on this food dispenser, may help a person become worry free and feeding their pets, skipping their meals which may cause starvation, some diseases or in some cases even death. With SMS the owner has the power to control the feeding time of their pets from anywhere around the world at any time as long as the cellular signal is present.

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