DESIGN AN ELECTRONIC MOUSE TRAP FOR AGRICULTURE AREA

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ABSTRACT

This paper explains the issues on the increasing of mice in agriculture area. The electronic mousetrap is being improved as it can catch more than a mouse with maximum of five. The device has a LCD to display a message of "Awaiting Mouse" and "Mouse Trapped". Then, the LED light will remain light up after the door has been closed. The LED were function as an alert to the owner to know either there is a mouse or not inside the trap. The LED will turn off once the mouse is release. In the project, the main part of the circuit consists of PIR sensors and LCD display. The coding is designed by using Arduino.

Keywords: PIR sensor; Arduino; LCD; mousetrap; LED.

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1. INTRODUCTION

For years' farmers faced some problems on mice. Malaysia consists of verity species of

mouse such as Rattus Norvegicus, Rattus Rattus and House Mouse. Rattus Norvegicus size is 19 to 22cm, Rattus Rattus is around 15 to 22cm and the house mouse is about 7 to 10cm.

From our observation, people usually stick a cheese in a snap-trap (classical mouse trap). However, by using this kind of trap, people cannot know the present of the mouse. In a few days, the mouse will die and it will produce an unpleasant smell. Other country already uses electronic mouse trap, meanwhile Malaysia still use the classical ones [1-10].

This product had created to help the user to catch mouse in agriculture areas. There are some features on our product such as it can catch more than a mouse in a single trap, within five mice in maximum and can display throughout the LCD display screen [11].

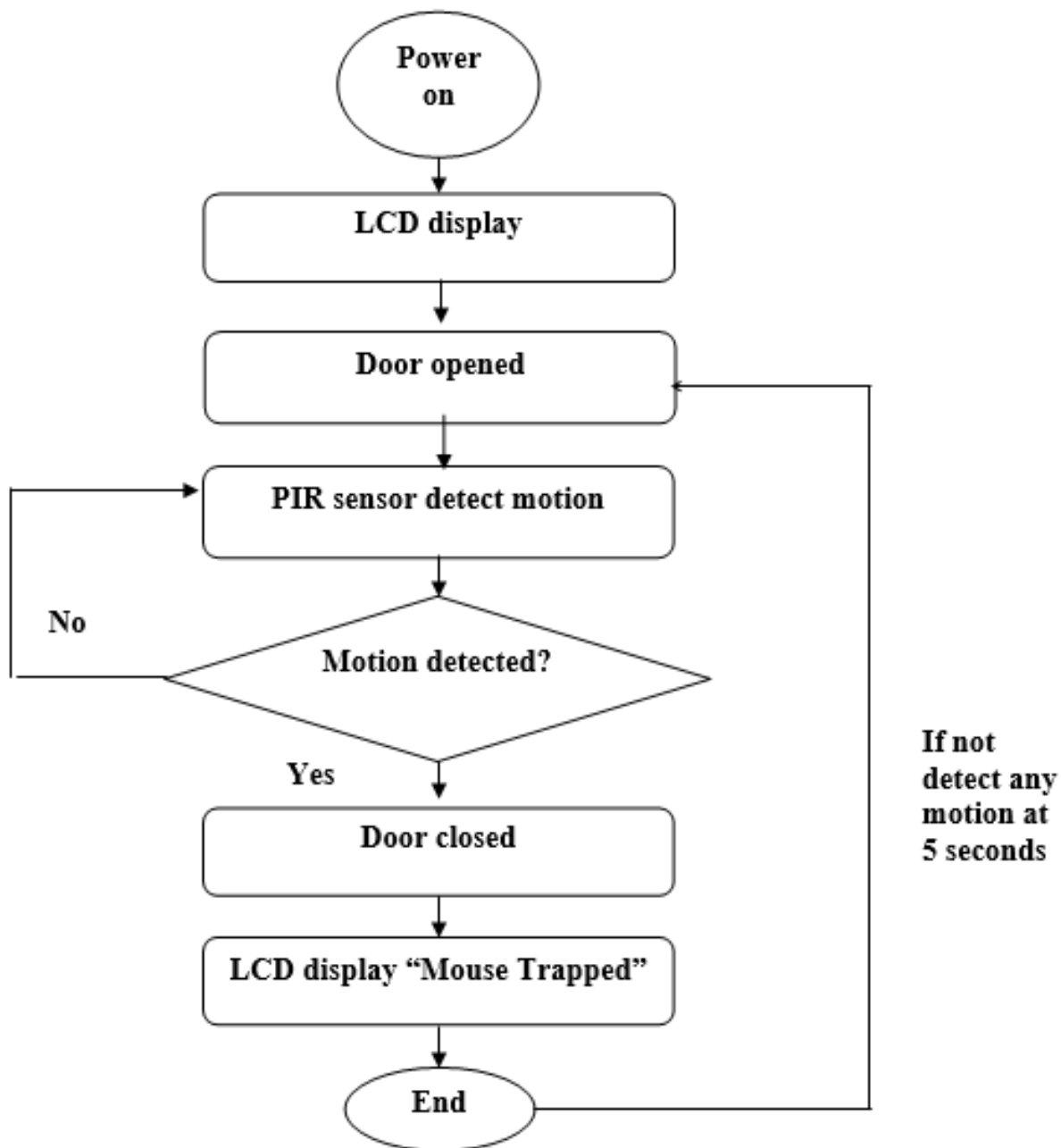## 2. METHODOLOGY

2.1. Flow Chart

Fig.1. Flowchart of overall project

The flowchart shows on the flow of operation for electronic mousetrap. This device will display the welcome message, a message of "Awaiting Mouse" once it waits for the mouse and a message of "Mouse Trapped" when it's trapped. Then, the LED light will remain light up after the first door has been closed. The function of the LED is as an alert to the owner to know either there is a mouse or not inside the trap. The LED will turn off once the mouse is release.
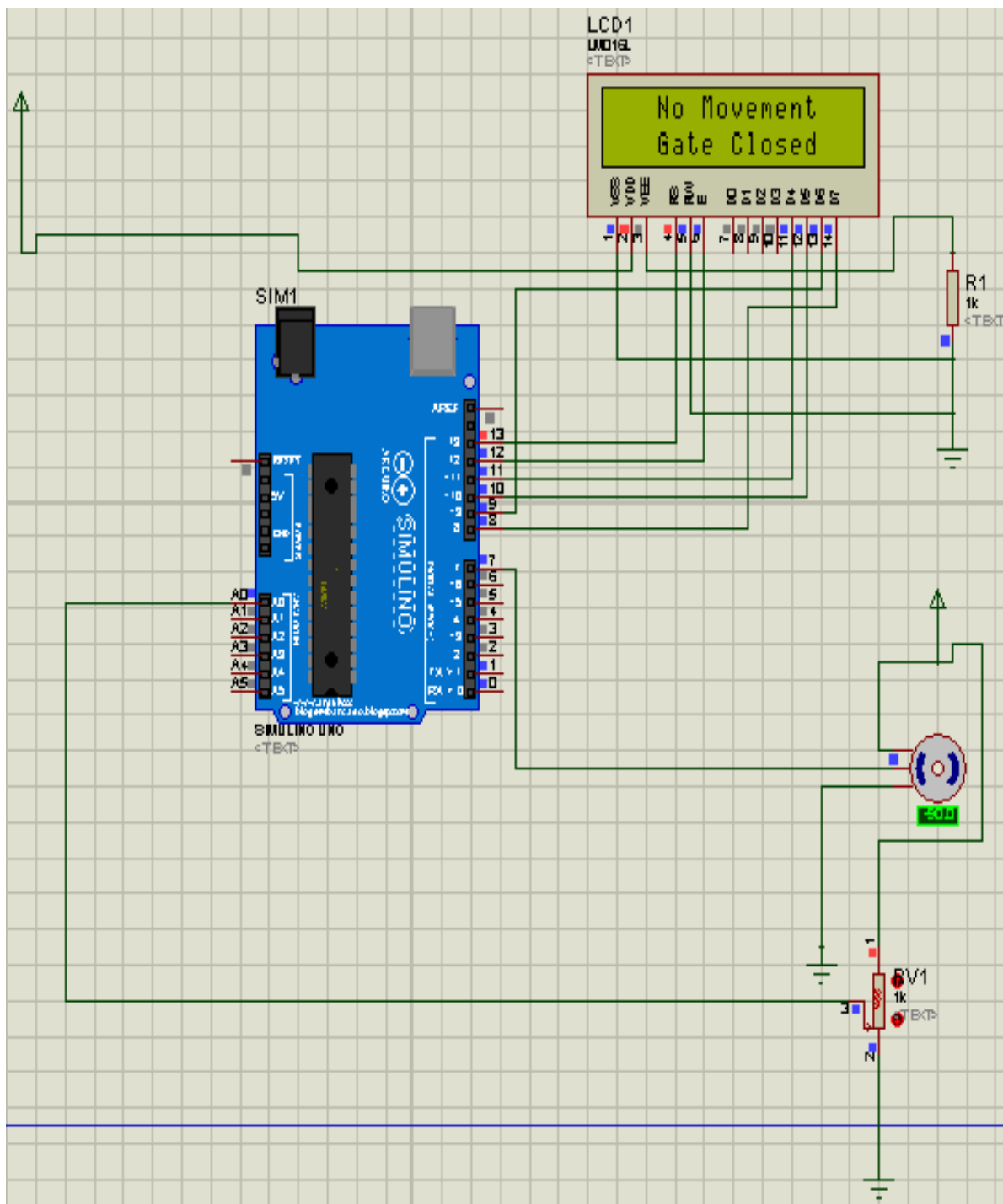
2.2. Schematic Diagram

Fig.2. Schematic circuit

Fig. 2 shows the schematic circuit of combination PIR sensor circuit and servo motor circuit. V^+ terminal at two circuit be connected and V^- is connected to the ground. 12V will supply to this circuit in order to operate.
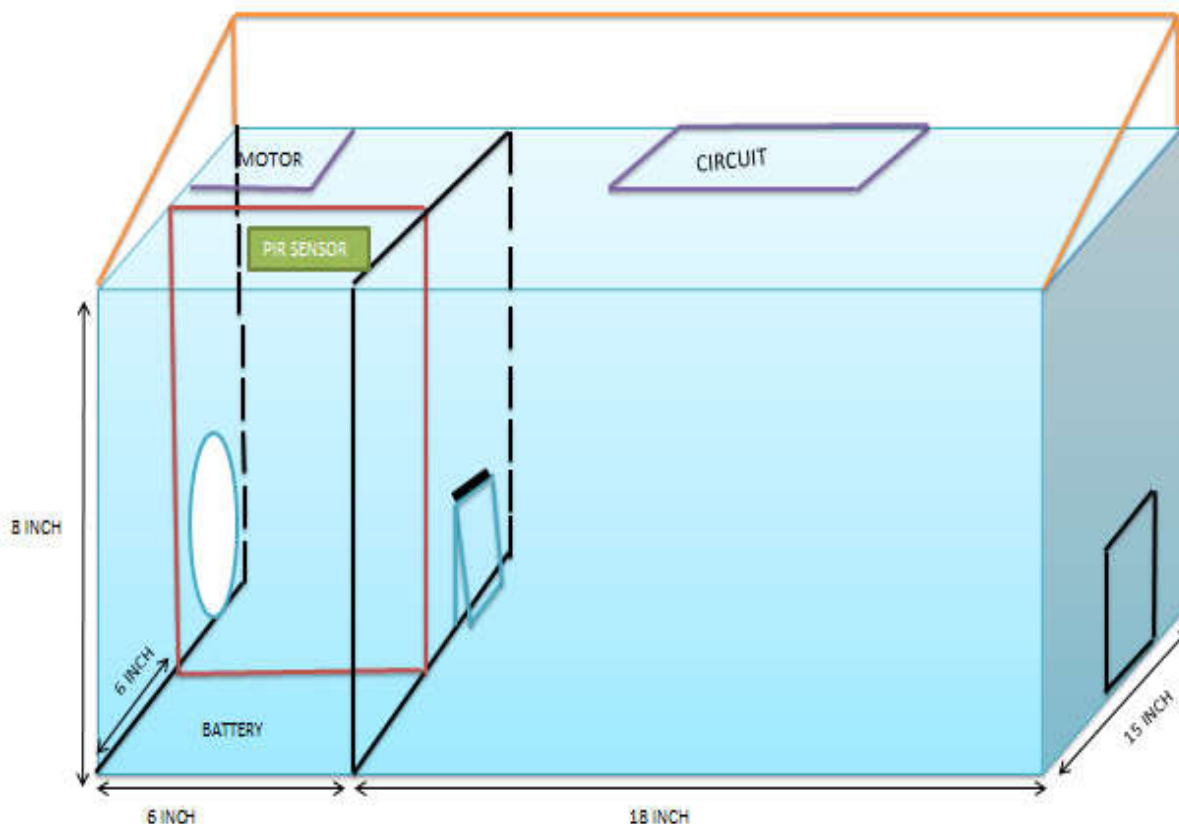
3. RESULTS AND DISCUSSION

Fig.3. Project design

This product has been manufactured in order to catch certain unwanted animal such as mouse in agricultural industries. With some new features, consumer will attract to the product. The trap consists of two compartments. The second door is designed to just allow the mouse to get into it. Besides, this mousetrap are designed as waterproof. So, it is an eco-friendly and long product. Plus, it will benefit the user because it won't damage the circuit.

The servo motor will operate when the PIR sensor detects motion in the range and the LED will on as an alert the user. The LCD will display "Awaiting Mouse" when the sensor does not detect any motion in the first block meanwhile when the sensor detects the motion and the first door close, the LCD will display "Mouse Trapped".

Table 1. Condition of LED

Movement of Mouse	Condition of LED	Condition of Motor
motion detected	on	turn $90°$ clockwise
no motion	off	turn $90°$ anticlockwise

Table 1 shows the condition of LED against the movement of mouse in the trap. When the mouse is detected in the trap, the LED will light up and LED will turn off when there is no movement detected in the trap. It acts as an alert to the owner to show the present of mouse in the trap.
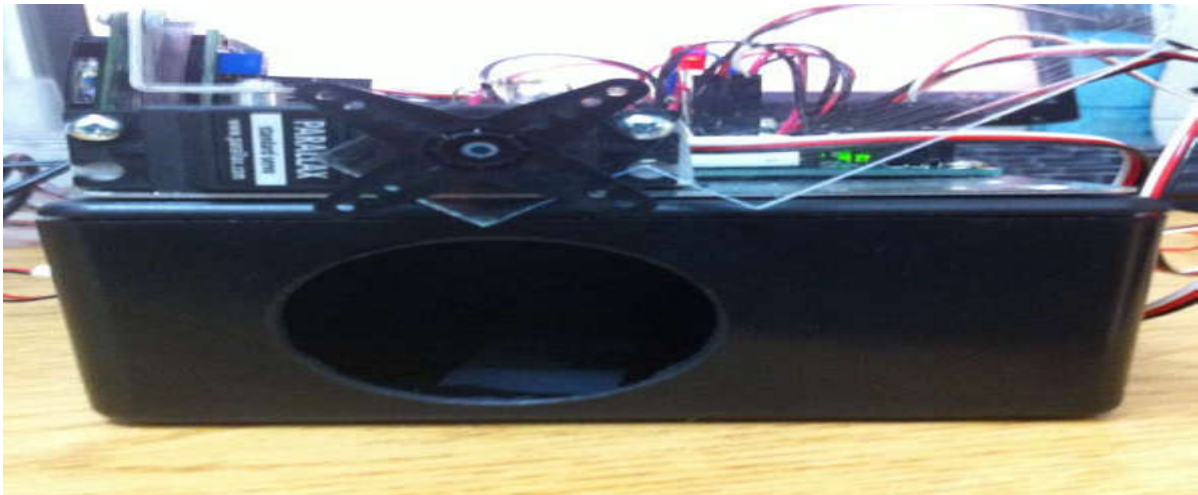

Fig.4. Completed prototype

4. CONCLUSION

In conclusion, this product can give many advantages to other people, especially amongst the famers in agriculture industries. From the operation of Electronic Mouse Trap, we can conclude that our project uses many electronic devices such as PIR sensor, Arduino [12-13], servo motor and other components [14-20].

There are various new things have been discovered on completing this project. Thus, there is lots of valuable knowledge that we can gain from the components used in this project. The experience to reveal the new thing is very useful especially on making new things in order to make it useful for people's future prospect. Lastly, we convince that our product is one of the new venture and very useful for all people especially for industrial industries.

6. REFERENCES

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