Department of Computer Science & Engineering

Course Title – Peripherals and Interfacing Lab

Course Code – CSE 316

Section - A_1

Final Project

Ultrasonic Shooter

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Submitted by:

Md. Hasibur Rahman (19101009)
Tanmoy Mazumder (19101013)
Shawan Das (19101020)

Submitted to:

Abdullah Al Omar
Lecturer,
CSE, University of Asia Pacific

Abstract

The ultrasonic module is widely used to measure distance and detect objects. The speed of sound makes the detection almost instantaneous, especially for the range of the sonar module(~1 Meter). Using this principle, The sensor can be used as a gun's ammunition and at the same time used to detect if a target has properly been hit. Using an Arduino board, moving targets can be arranged to build a mini shooting range with a score system.

Motivation

Shooting video games are growing popular each day. However, holding an actual shooting device is a whole different experience altogether, and significantly more fun for target practice.

This experience can be obtained through one of two ways: Shooting at an actual gun range with real weapons, which is immensely dangerous and often not worth the risk, cost, and additional effort. The other is doing so with non-lethal ammunition such as paint-ball, laser tag, and similar arrangements. However, these are quite expensive and require a lot of resources.

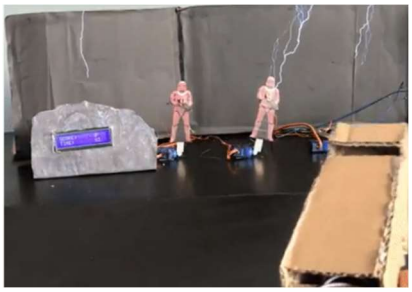
Considering these facts, we propose an inexpensive mini target practice system that utilizes the ultrasonic sensor to both shoot and confirm target hit.

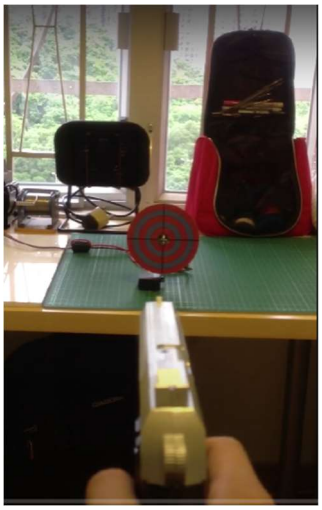
Existing Similar Projects

Laser Shooting game(Star Wars) Game .

Laser Shooting Game

Arduino Target

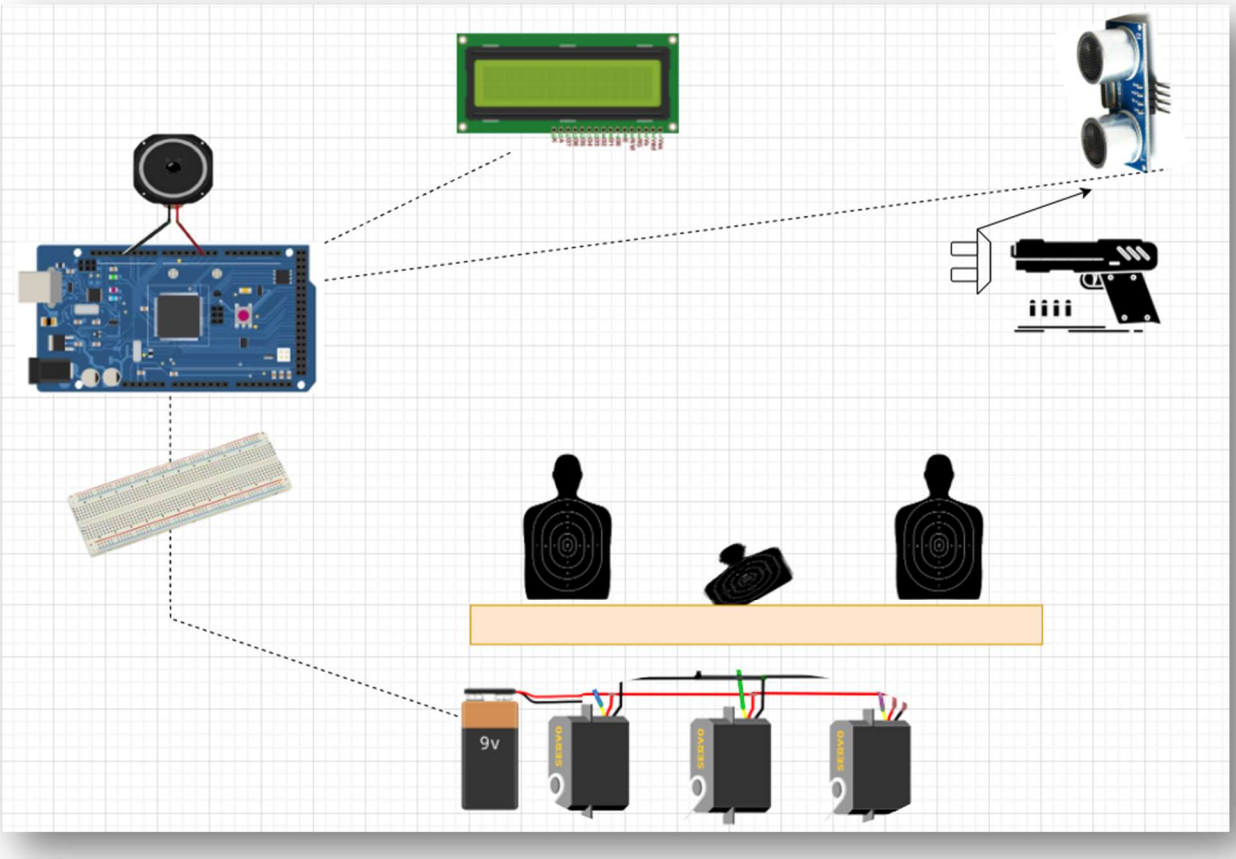




How it's different

Each of the projects mentioned in the previous section use laser, along with laser detection module on each of the targets. The detection module costs a significant amount of money. Our project utilizes the ultrasonic sensor to detect if the target has been hit. This enables the project to be built in a far tighter budget.

Our project also makes it more realistic by adding a trigger to send the ultrasonic pulse, like shooting real ammunition, making it more realistic than the continuous stream of laser.



Budget

- Arduino mega - 1850/=
- Jumper wires x 50 - 200/=
- Sonar Sensor (HC-SR04) - 150/=
- Servo Motor MG995 x 3 – 3750/=
- Cardboard - 120/=
- Gun - 250/=
- Battery x 4 – 240/=
- Button - 50/=
- LCD Module - 220/=
- Breadboard - 150/=