PROJECT REPORT

COURSE:
HUMAN COMPUTER INTERACTION

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❑ Introduction

In order to fulfill user expectations and promote efficient human-computer interaction, the user interface is crucial. Through contrasting graphics, simple design, and responsiveness, a well-done user interface allows efficient interaction between the user and the program, app, or machine.

Tangible user interfaces are physical objects that may convert user actions into input events in the computer interface (TUIs). A tangible user interface enables the user to interact with a digital system by manipulating genuine objects that are linked to and accurately represent the features of the system in question.

Here, we create a project for a user (Archer Game Control using a tangible Interface) that offers a tangible user interface experience.

❑ Project background

Our Project name is Archer Game Control using Tangible Interface. In this Game we find some problem before we build our project. In this game two types of work that we have to build. First we have to control our movement and second is load the archery and fire it on the target.

In this archery game, The movement was two dimensional. One goes to X Axis And other goes to Y Axis. When we play the game in our computer via BlueStacks we used our mouse to control the movement. If we move the mouse right side then the target movement go to right side and if we move the mouse left side then it goes to the left side. And when we fixed our target then we click the left button of the mouse to reload the arrow. After fixed the target we release the left button of the mouse for hit the target.

Our goal is build this Game using Tangible Interface. When someone will play the game by using this Interface they will feel the game like they are playing the game in real. Our main target to build the game for the kids who can feel the game like real.

❑ Methodology

Method- We are using Tangible Interface method for building the project.Archery is a game for a players who throw an arrow to the target and get points . Our project implements the archery game with a graphical user interface. The Game follows the basic rules of archery. From HCI theory classes , we have taken to keywords Affordance and Feedback to build the game by using tangible interface. Affordance by creating our design of movement and Feedback is the experience of visual or sense of touch. Every action should have feedback to indicate whether the action was successful or not. These theories were main ideas of our project.

Tools those are using for the project-

1. Arduino Leonardo
2. Flex sensor
3. Mpu 6050
4. Breadboard
5. Jumper wire
6. 47K ohms Resistor
7. USB Cable

 After managing all the tools we have build the project. Here we use the MPU6050 for controlling the archery target. It basically works in two ways. In game we see that the target can go to either up and down or left and right. So that with this component we control the target point by its movement. In game we used mouse left button click for load and release the arrow. In our project we use flex sensor for load and release the arrow. When we bend the flex sensor arrow get reloads and when we release the flex sensor then the arrow get fires. We used jumper wire for connecting the components to each others. And a 47k resistance which is connecting with the flex sensor. The hole connection is stablished over a breadboard. And the project is controlled by the Arduino Leonardo with a cable and the cable connected with the computer. Before connecting with the computer we have done some code for connecting with the Arduino. And this code implemented into the Arduino . In this code we set the sensors capacity when and how the arrow will be fired and also what will be the movement of our sensor in the main screen .After all the implementation we are ready to start the game.
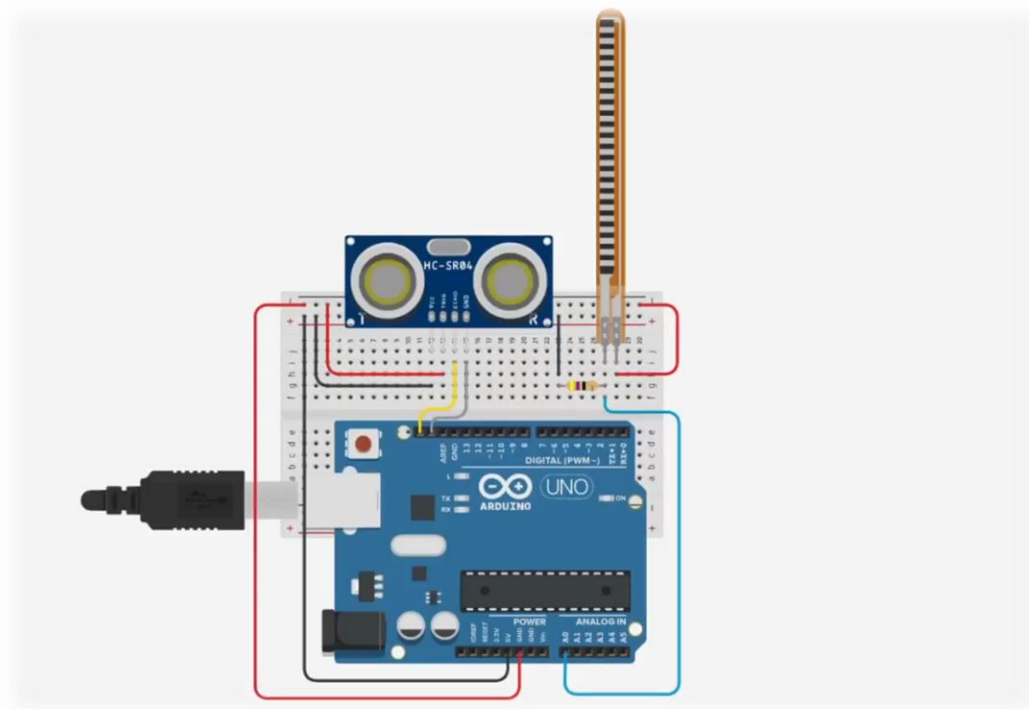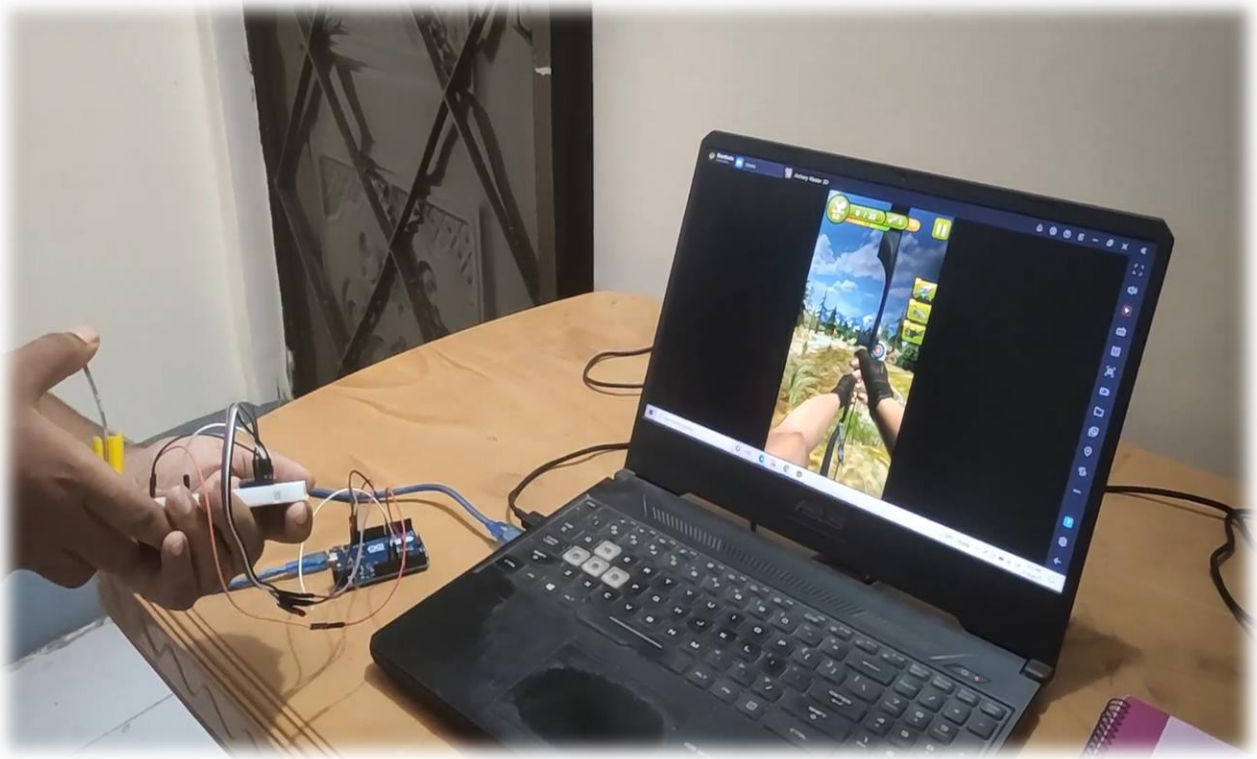

Fig-1 : Circuit Diagram of the project.

Fig -2 : The Complete Game by playing a user.

❑ Result

Our project is implemented effectively. We experimented a lot to identify project flaws. But it always functions well, and everything we intended to accomplish was accomplished without a defect.

❑ Discussion

As a user plays a game in our project, we wished to provide a realistic experience.

This initiative not only benefits our game, but it also helps other sorts of games, such as creating a football penalty shoot game. The physical feeling of shifting and motion is what we get when we try to shoot or aim in a game.

This game may be made to seem more realistic by moving about and running by using accelerometers and proximity sensors. Nothing will be missed by running, changing, moving, aiming, or shooting. Therefore more tangible user interface will be added.

❑ Conclusion

The use and mention of three-dimensional (3D) sensors across. Because of this, using virtual reality (VR) equipment, we can simply create 3D depictions when playing our game. As a result, the consumer will experience our game as completely real.

Future technology will see an increase in the number of sensors, gadgets, and machines produced. Many more machines will require many more IP addresses. Day by day it is increasing use of machines in regular life. The IPV6 and omnipresent (ubiquitous) idea put forward by Mark Weiser has been demonstrated to be accurate since the nineteenth century.