Claw Machine

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01

Abstract

Abstract

Our project is a claw machine which is an enjoyable vending machine found in arcades, malls, and movie theaters. It presents a time-based challenge where players control their gameplay duration and aim to win items within that time frame. In this project we aimed to take the game to a new level so we have three ways to play: using a joystick, a mobile phone application, or hand gestures through a camera and image processing.

02

Problems and objectives

Problem

01

Trying to take the traditional game into a new level by including modern technology to the game by adding new modes of playing.

The challenge of building a claw machine with better gripper that catches evert time its aimed perfectly.

02

Objectives

1. Provide the user with a new play experience using mobile application, or through hand gestures

2. Design a new gripper that solves the problems of the traditional gripper

3. Make the game more interactive by providing dynamic music and lights.

4. providing the user with the opportunity to customize the game to his preferences from movement speed ,playing time and playing mode .

03

Implementation

Hardware Components

1

Arduino Mega

- Main System Controller

2

Orange Pi

- Hand Gestures Processing

3

Esp 8266

- WIFI And Mobile Application

Hardware Components

4

5

6

Joystick

- Normal Mode

Push button

- Start/Claw

Camera

- Hand Gesture Mode

Hardware Components

7

8

9

Lcd

- Displays Game Instructions

Keypad

- Setting Up The Game

RFID

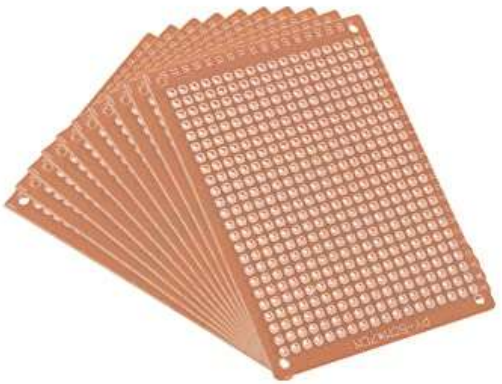
- Payment

Hardware Components

10

PIR

- Prize Detection



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Soldering Board

- Voltage And Ground
- Circuits

12

Power Supply

- Powering The System

Hardware Components

13

Nema 17

- Gripper Movements

14

HY DIV268N

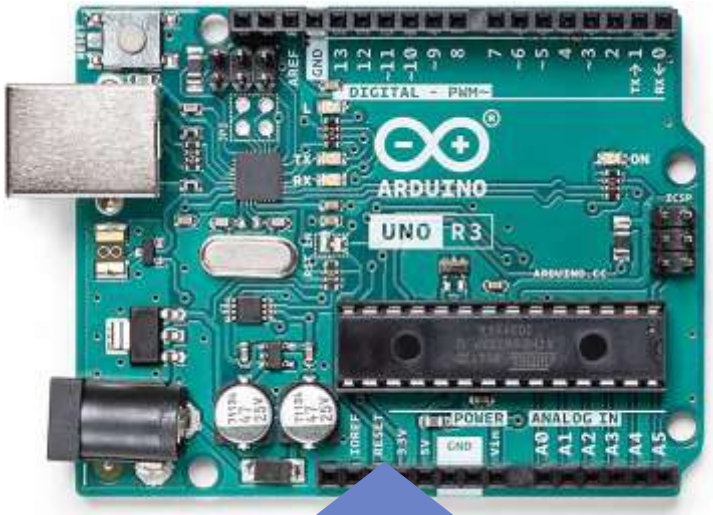
- Driving Motors

15

Limiting Switches

- Movement Limits

Hardware Components



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Arduino Uno

- Controlling Lights And Sounds

17

Speakers

- Sounds

18

RGB Led Stripe

- Lights

Hardware Components

19

SD Card

- Storing Sounds

20

IRLZ 44N

- Driving Led Stripe

21

Resistors

- Driving Circuit And Voltage Divider

Software

1

Arduino IDE

2

Mediapipe

3

Blynk

Joystick Mode

- Joystick
  - Control Movements Direction
- Push Button
  - Claw The Prize

Mobile Mode

- Virtual Joystick
  - Control Movements Direction
- Claw Button
  - Claw The Prize

Camera Mode

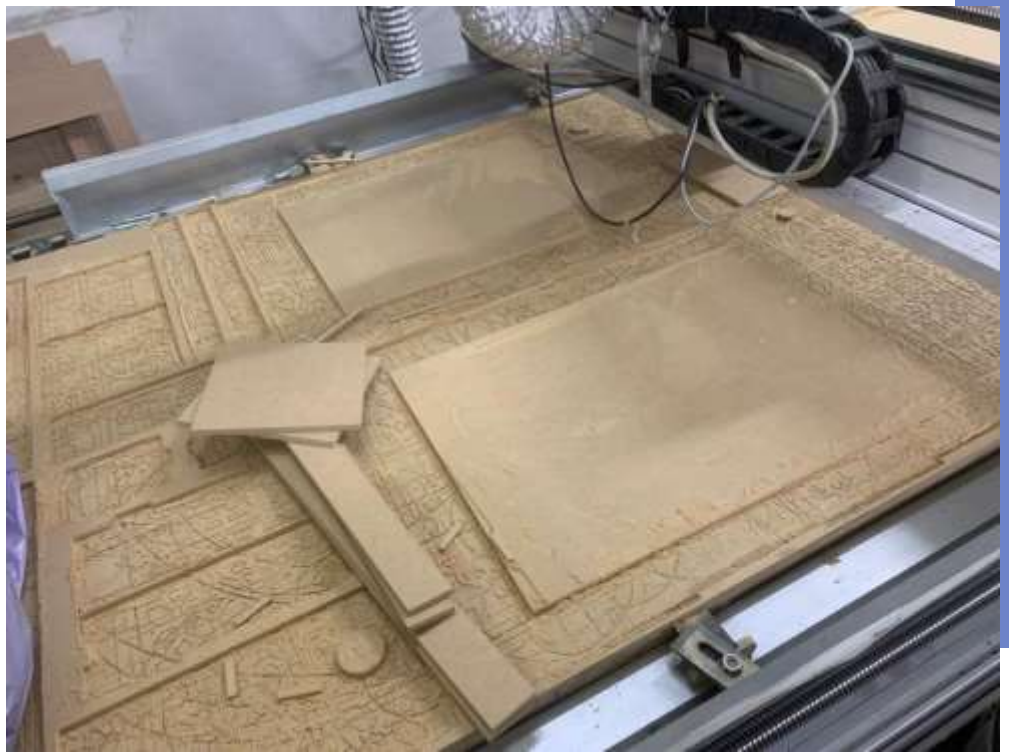
Hand Gestures

- 0: Claw
- 1: Forward
- 2: Backward
- 4: Right
- 5: Left

04

Constraints

Constraints



Price: due to the limited budget we had and since the project actually was a bit on the pricy side, we chose to make the machine from wood so the final machine was not an actual product like we see in real life.

Size of the machine: also the size of the machine is not the same as in real life because this is just a representative example of the real game with more options and features.

05

Future work

Future work

Adding coin accepter for those who wants to pay using money

Adding voice system for people with disabilities so they can give instructions for the game by voice.

Adding a new feature that tends to make the game more as a griper ,in this feature we give the machine a picture of what we want and it searches for it and grips it.

Thank you