Robot Pitch - Game Robot

Introduction

Hardware

- 2 IR Sensors for Object-proximity sensing
- 1 Ultrasound-Proximity Sensor – *Not necessarily present, but there are pins for a HC-SR04 type sensor.*
- effet.
- 2 CC Motors
- 1 Color Camera (Pannable & Tiltable)
- 1 Buzzer
- 1 Joystick ***(unused in our use case)***
- 4 RGB LEDs
- 1 IR Remote
- 5 IR Sensors for Line Tracking

Concept

Setup

Users/participants will sit around a table. The robot should be put on said table, which allows it to stand at the correct height relative to the participants.
The robot should be able to figure out where a human is sitting ***(Camera)*** and move ***(CC Motors)*** closer to it ***(Proximity Sensors – IR & Ultrasound OR IR Line Sensors)***. The process begins by activating the game ***(Remote)***.

Query

Once the necessary distance is reached, the robot will look at the user and prompt them to play with him by blinking several times ***(LEDs)***.

- The user can accept by doing a thumbs up, which will cause the robot to be happy ***(Buzzer)*** and begin playing.
- The user can decline by doing a thumbs down, which will cause the robot to look down sadly and to back away.

Game 1 – Rock Paper Scissors

The robot will vibrate ***(Buzzer)*** and blink ***(LEDs)***, to mimic counting down from 3.
Once the countdown is achieved, the LEDs will light up a static color, indicating the robot's "choice" (may change):

- **Green:** Paper
- **Red:** Scissors
- **Blue:** Rock

The robot will acknowledge the user's selection using image recognition and will assess its result.

Game 2 – Spin the Wheel

The user will be asked to spin a tricolor wheel (colors to be decided).
The robot will vibrate ***(Buzzer)*** and blink ***(LEDs)***, while the wheel is spinning, but will decide a (random) color
Once the wheel stops spinning is achieved, the LEDs will light up a static color, indicating the robot's "choice".
The robot will acknowledge the wheel color using image recognition and will assess its result.

Game 3 – Simon Says

The robot will vibrate and indicate a fixed color using its LEDs.
The player must show him an object of the stated color, and the robot will assess the result.
(To admit defeat, the user must cover the camera until the robot vibrates and the LEDs stop lighting up.)

Result

- If the robot won, it would blink ***(LEDs)*** and vibrate ***(Buzzer)***, while spinning around/dancing ***(CC Motors)***, then ask for another game.
  - If the user agrees to another game, the loop continues
  - If the user says no, the robot will act as if the game was declined.
- If the robot lost, it would act as if the game was declined.