Report on

‘Raspberry Pi Object Detection Car’

By

N Pravesh

Table of Contents:

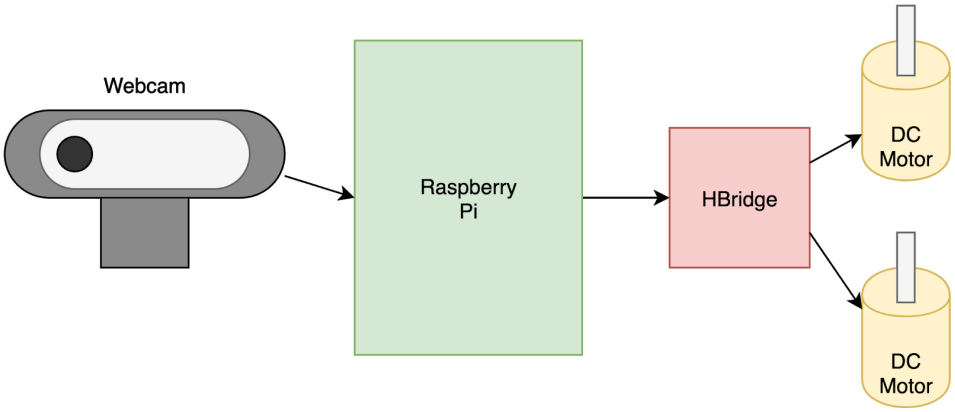
Objective:

To construct a Raspberry pi object detection car.

Description:

The Raspberry pi object detection car is designed to rotate until it finds a TT ball (Object). After it finds detects the ball the car moves till the ball and catches the ball with an arm attached to the car. This type of car can be made to find any type of object we want to track and catch. This can be further implemented on drones to track a specific object living or non-living.

Block Diagram:



System Requirement Specification

Hardware Requirement:

- WebCam
- Raspberry Pi
- H-Bridge
- 2 x Dc Motor
- 2 x Wheels

- Chassis
- 2 x Servo (Optional)

Software Requirement:

- Python
    - Library: 1. cv2
    - 2. numpy
    - 3. time
    - 4. serial
    - 5. RPi.GPIO

Working Principle:

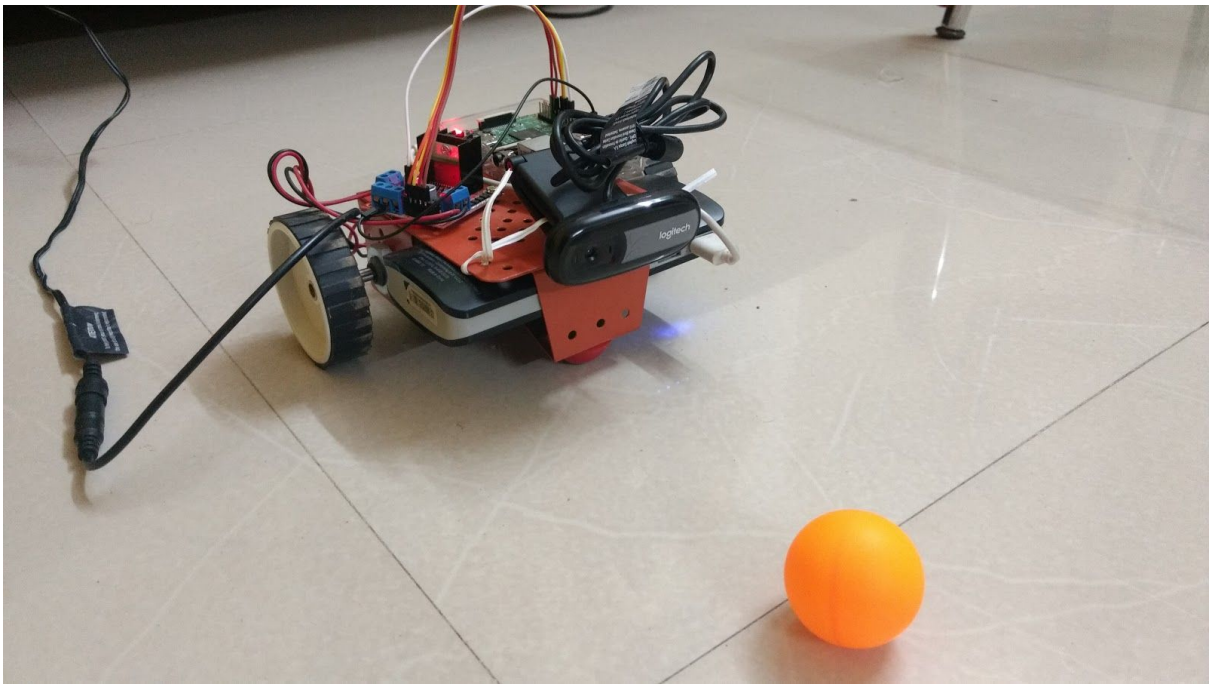
Raspberry pi commands the motors through h-bridge using the RPi.GPIO library. First, we move the two motors of the car to rotate in the same direction so that the car moves rotates in one direction. Meanwhile, the camera keeps on streaming until it finds the specified object in the live stream. Once the object(TT ball) is found, the car moves forward till the ball is reached. Then the servo motors are triggered to rotate a certain angle so that the arm attached to the servo catches the ball (this has to implemented).

Circuit Connections:

- Connection of Raspberry pi to H-Bridge:
    - 27 - IN1
    - 24 - IN2
    - Gnd - Gnd
- Connection of Raspberry pi to Webcam:
    - Connect Webcam to Raspberry pi USB port

Result:

The result of the project Raspberry Pi object detection car is verified and it satisfied all my requirements without any exceptions.


logitech