

WifiBlock 101

Your first Wifi Controlled Robot



A remote controlled robot

Aim of the project:

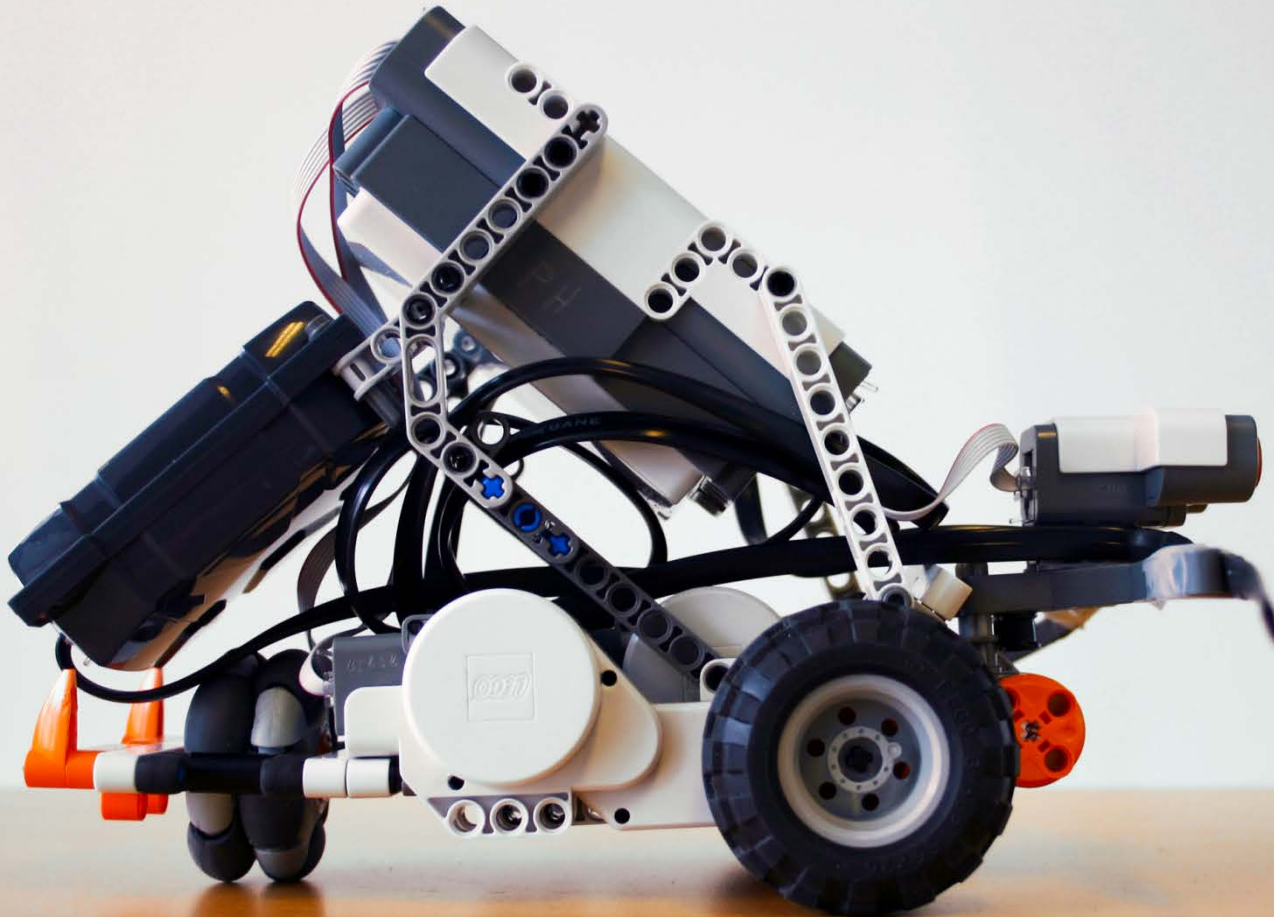
The aim of the project is to build a Wifi remote controlled NXT based robot.

What you need:

- Lego Mindstorms NXT
- WifiBlock
- Wifi access point or router
- PC with the following software: NXT-G, Easy PHP

STEP 1: Build the robot

Build a Tribot inspired robot with a WifiBlock attached to a sensor port



[Instructions](#)



STEP 2: Set up the server side

m.php

```
1 <?php
2 $role = $_GET['role']; //We handle the role of the client that can be 'robot' or 'remote'
3
4 switch ($role) {
5     case "robot": //For the case 'robot', we fetch the command from the data.txt file
6         $fp = fopen("data.txt", "r");
7         $order = fgets($fp, 255);
8         fclose($fp);
9         echo $order;
10        break;
11
12        case "remote": //For the case 'remote', we write the command passed by the 'order variable in the data.txt file
13            $order = $_GET['order'];
14            $fp = fopen("data.txt", "w");
15            fseek($fp, 0);
16            fputs($fp, $order);
17            fclose($fp);
18            break;
19        default: echo 'Ooops, there is a problem'; //We should never arrive here :)
20    }
21    ?>
```

For Windows based PC, you can use [easyPHP](#)

STEP 3: Set up the remote control side

Remote.html

```
1 <html xmlns="http://www.w3.org/1999/xhtml">
2 <head>
3 <title>NXT Command Center</title>
4 <!--We load jquery as we use the Ajax GET function of the library -->
5 <script type="Text/Javascript" src="https://ajax.googleapis.com/ajax/libs/jquery/1.6.1/jquery.min.js"></script>
6 <script type="text/javascript" >
7 $(document).ready(function(){
8     $("#FORWARD").mousedown(function(){
9         $.get("/m.php?role=remote&order=1") //for items with the ID Forward, we send '1' on mousedown
10    });
11    $("#BACKWARD").mousedown(function(){
12        $.get("/m.php?role=remote&order=2") //For items with the ID Backward, we send '2' on mousedown
13    });
14
15    $("#LEFT").mousedown(function(){
16        $.get("/m.php?role=remote&order=3") //For items with the ID Left, we send '3' on mousedown
17    });
18
19    $("#RIGHT").mousedown(function(){
20        $.get("/m.php?role=remote&order=4") //For items with the ID Right, we send '4' on mousedown
21    });
22
23    $("#STOP").mousedown(function(){
24        $.get("/m.php?role=remote&order=0") //For items with the ID Stop, we send '0' on mousedown
25    });
26
27    $(".remoteControl").mouseup(function(){
28        $.get("/m.php?role=remote&order=0") //For all items with the class remoteControl, we send 0 on mouseup
29    });
30 });
31 </script>
32 </head>
33 <body>
34 <!--
35 Each Button has an ID allowing to perform the associated action on mousedown.
36 All buttons have the same class 'remoteControl' in order to send a STOP command on the mouseup event
37 -->
38
39 <button id="FORWARD" class="remoteControl">FORWARD</button>
40 <button id="BACKWARD" class="remoteControl">BACKWARD</button>
41 <button id="LEFT" class="remoteControl">LEFT</button>
42 <button id="RIGHT" class="remoteControl">RIGHT</button>
43 <button id="STOP" class="remoteControl">STOP</button>
44 </body>
45 </html>
```

FORWARD

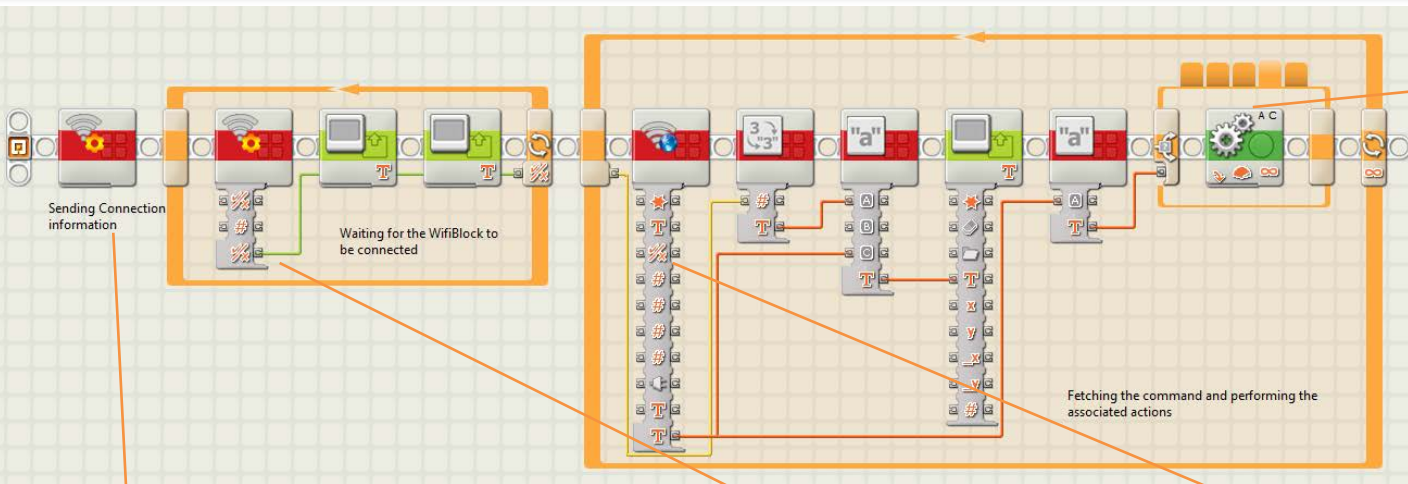
BACKWARD

LEFT

RIGHT

STOP

STEP 4: Set up the NXT-G program



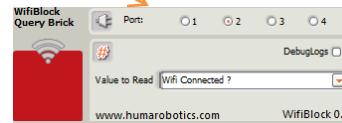
Using a Commutator:

We move the A and C motors according to the received order.
Case 1: forward
Case 2: backward
Case 3: left
Case 4: right
Case 0: stop



Writing the Wifi information

IP for the WifiBlock
IP Mask
Gateway
SSID (name of the Wifi network)
Security type
password



Querying the WifiBlock

Wifi Connected ?
Reply is a boolean True or false



Doing a GET request with the WifiBlock

IP Address, Port, Expected size of the returned data, URL,
This part does a request as follows:
192,168,0,108:80/index.php?role=robot

The reply is a file containing one character

Useful links:

Run a webserver on your PC:

<http://www.easyphp.org/>

Rotacaster wheels for NXT:

<http://www.generationrobots.com/rotacaster-omniwheels-for-lego-nxt-hitechnic,us,4,2-NXT-Rotacaster-wheel.cfm>

Flexible Sensor for NXT:

<http://www.generationrobots.com/dflex-flexible-sensor-for-lego-mindstorms-nxt-robots,us,4,dFlex-Flexible-Sensor.cfm>

Building instructions for the Tribot robot:

<http://cache.lego.com/upload/contentTemplating/Mindstorms2BuildingInstructions/otherfiles/download4BF4733F2932BCFA4F0C537E796B12CB.pdf>

Get cool sensors and accessories for your NXT:

<http://www.generationrobots.com/indexus.cfm>

Get it touch with us:

www.humarobotics.com



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