LEGO® Rover with NXT2WIFI

By Benoît Parsy

The minute I read about Danielles' crowdfunding project on the Eppela site, I bought the NXT2WIFI sensor.

I knew I was going to use it but I wasn't sure exactly how and for what…As soon as I received it, I updated the firmware, enabled the module, verifying that everything worked well. I used the test interface to check computer and iPhone compatibility and then I put everything neatly away into my toolbox

And then opportunity knocked, in the form of an email from the "NASA Challenge" event organizer in Paris. She knew me through the Hackidemia Association and my MINDSTORMS robot programming educational workshops. She told me about the "LEGO Rovers" challenge and asked me if I would be interested in building a robot (what a question!) which would:

- Demonstrate a in simple and practical way the difficulties of operating Rovers on Mars
- Use LEGO® if possible, so that existing LEGO MINDSTORMS kits can be re-used.
- Create a user-friendly interface, enabling the user to modify the parameters as desired: delay, objectives, timing and the way in which the task is performed.

All this should be available as accessible as possible, via tablets, computers and smartphones, WIFI: Bingo! I now had the opportunity to test the NXT2WIFI in situ.

The evening before the challenge, I went to the team-building party with two robots and my NXT2WIFI, and there I met two guys who were interested in the LEGO Rovers challenge and in playing with LEGO! A third guy borrowed one of my robots for a completely different challenge about Martian Rover trajectories, Curiosity@home.

What a stroke of luck, they were newcomers to MINDSTORMS, but with excellent computer programming skills.

Using the test server source code we were rapidly able to get the Rover working albeit with limited features: left, right, forward, reverse.

Enguerran implemented the simulation of the propagation time directly in the webserver's javascript code, delaying the reciprocal transmission of messages by the number of seconds entered into the interface.

Guillaume was in charge of the interface; he modified, cut and pasted and set up the controls one by one, and so doing was able to offer two types: a simple one for children and a more advanced one, enabling all the features interactions.

I wanted to implement a sophisticated odometry with commands such as "forward 10cm, rotate 70° forward 50cm, but a weekend was all too short. Changing the structure of the robot to create an arm, and the addition of color and touch sensors, made the usefulness of the Mars rover's arms more tangible.

Well, we had a great time, lots of fun experimenting with the NASA Challenge, and NXT2WIFI enabled us to propose a simple and robust solution that the other competitors at the Parisian meeting appreciated so much that they gave us the second place, allowing us to compete for the final round at world level. The challenge creator herself is now trying to get funds in order to buy a NXT2WIFI to test our solution.

Project page: http://spaceappschallenge.org/project/nxtspaceapps/
http://pbenco.wordpress.com/
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