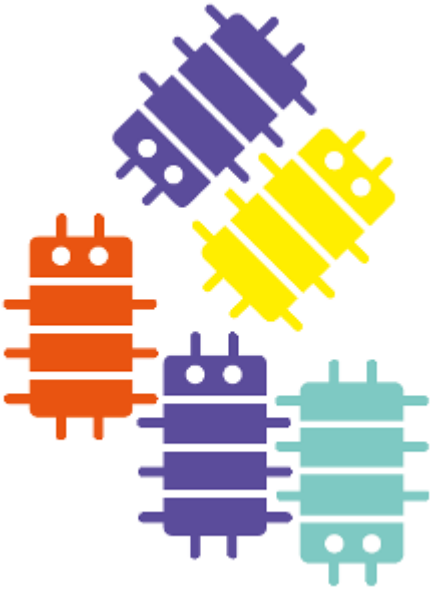
HackLab Projects



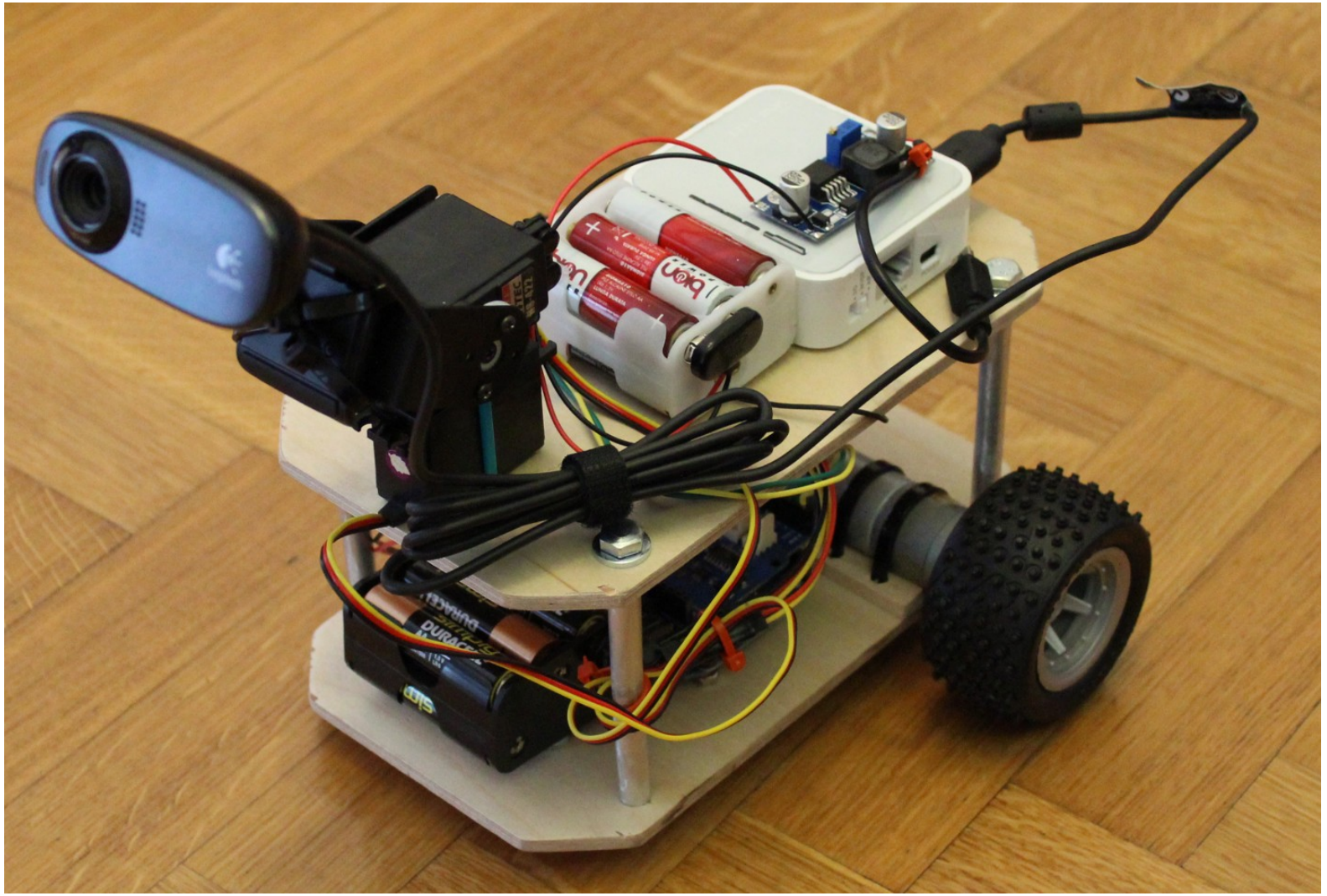
HackLab Terni

Laboratorio aperto a tutti di
elettronica, scienza e arte.

hacklabterni.org

HackLab Projects

Arduino Rover WiFi



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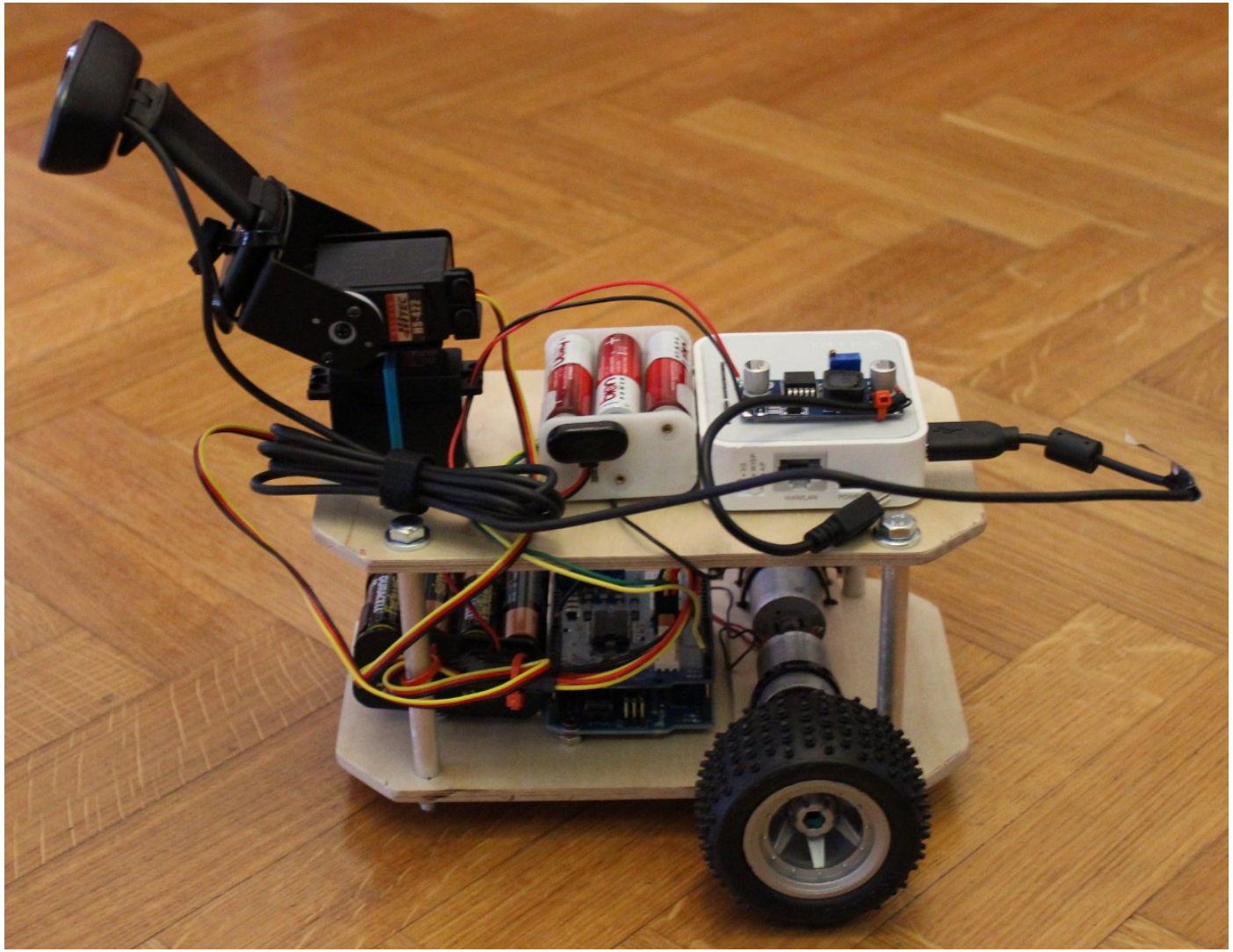
Arduino Rover WiFi



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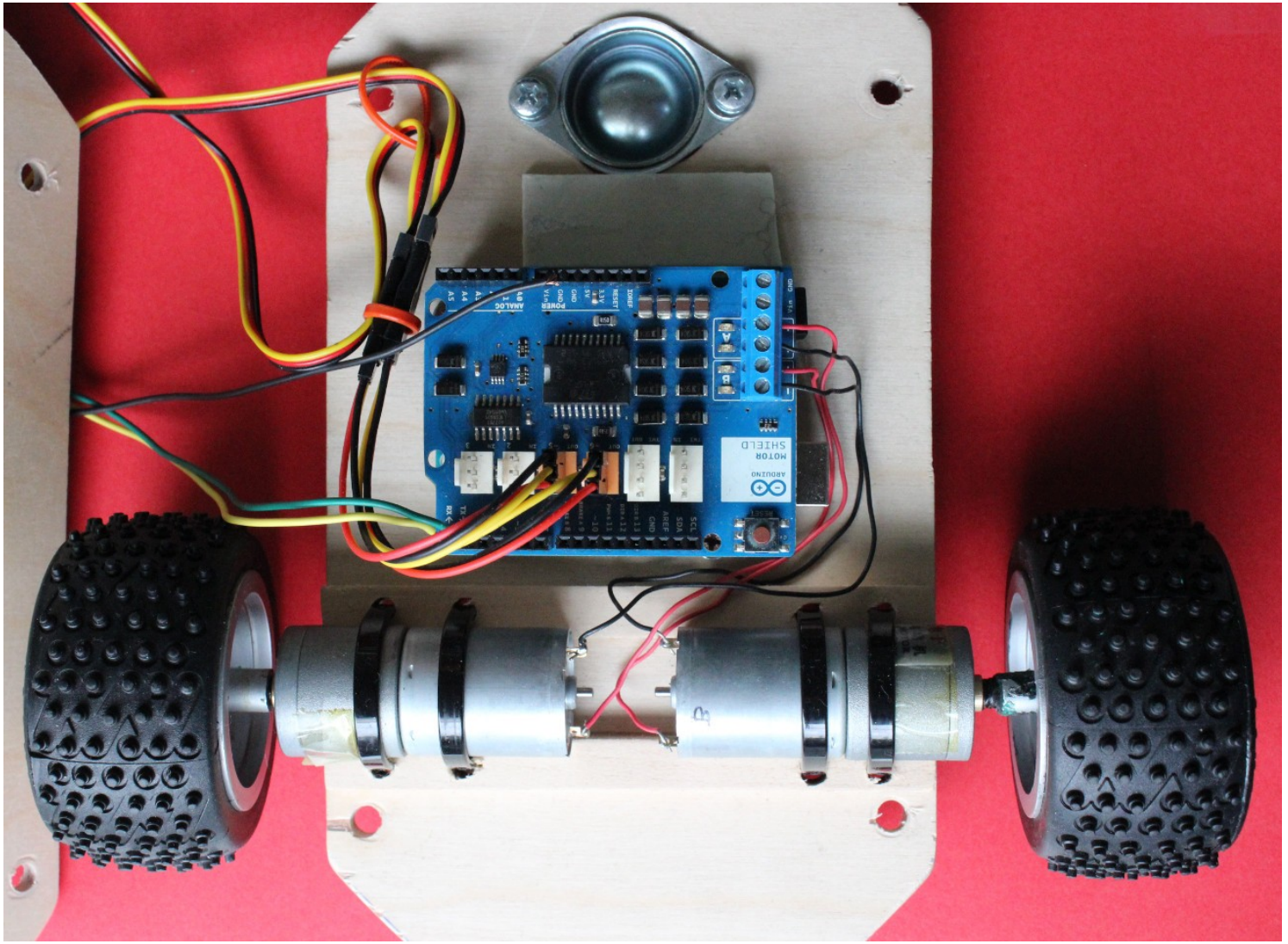
Arduino Rover WiFi



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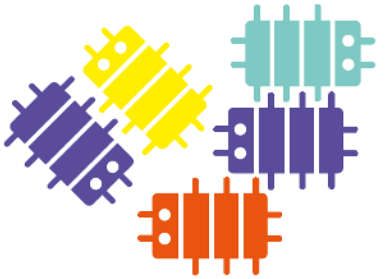

Arduino Rover WiFi

It is a little rover that can move and see around and is remotely controlled with commands sent via WiFi network. This commands can be sent to the rover using a wireless device (smartphone, tablet, netbook).
The user can control the rover both for the motion direction and for the webcam pan and tilt using an application developed in Processing.
In this application we have used a Computer Vision open source library (OpenCV) for face detection and tracking.

A wireless router has been used for WiFi communication between the rover and the remote application. On this wireless router we have installed OpenWRT (a Linux distribution for little devices like this) and developed an application able to receive the commands via WiFi and to communicate this commands to Arduino via serial port.

The wireless router has been also configured to receive the video from the webcam and to stream this video on the WiFi network.

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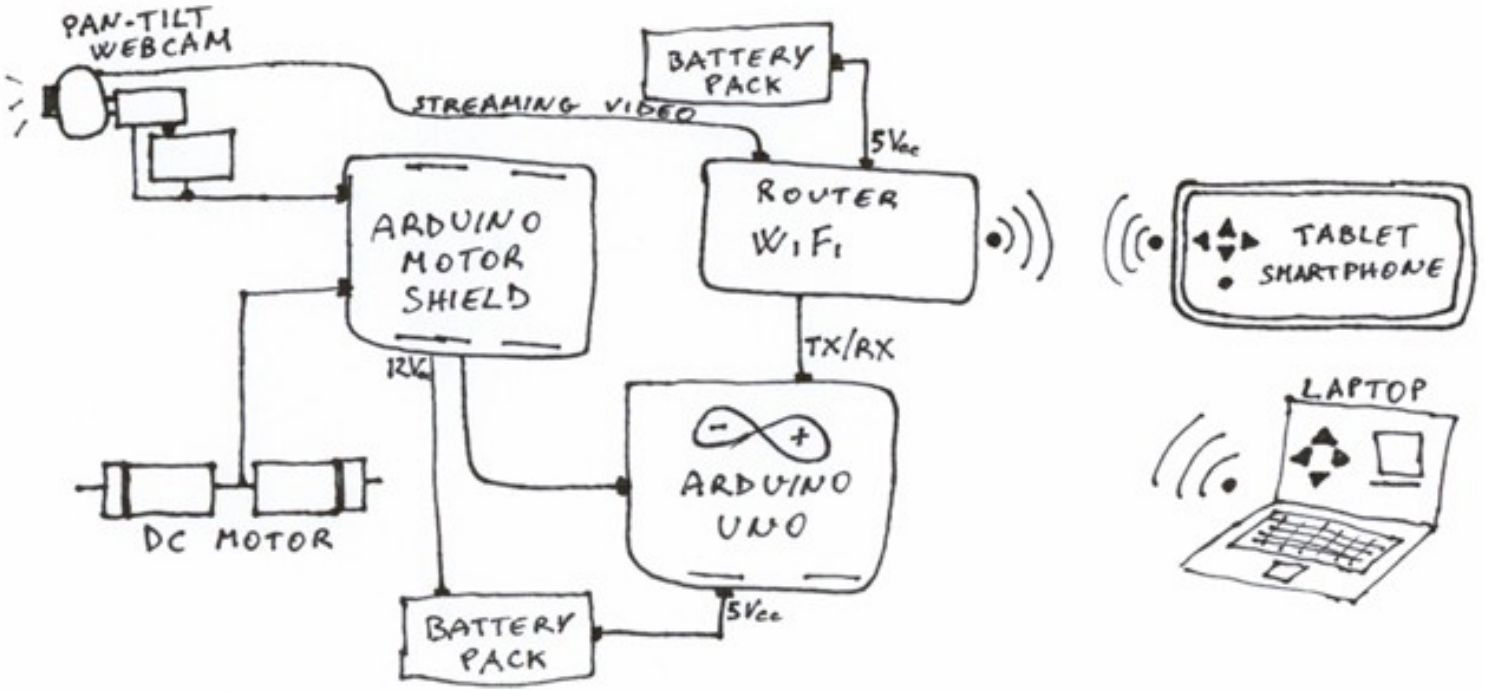
Arduino Rover WiFi



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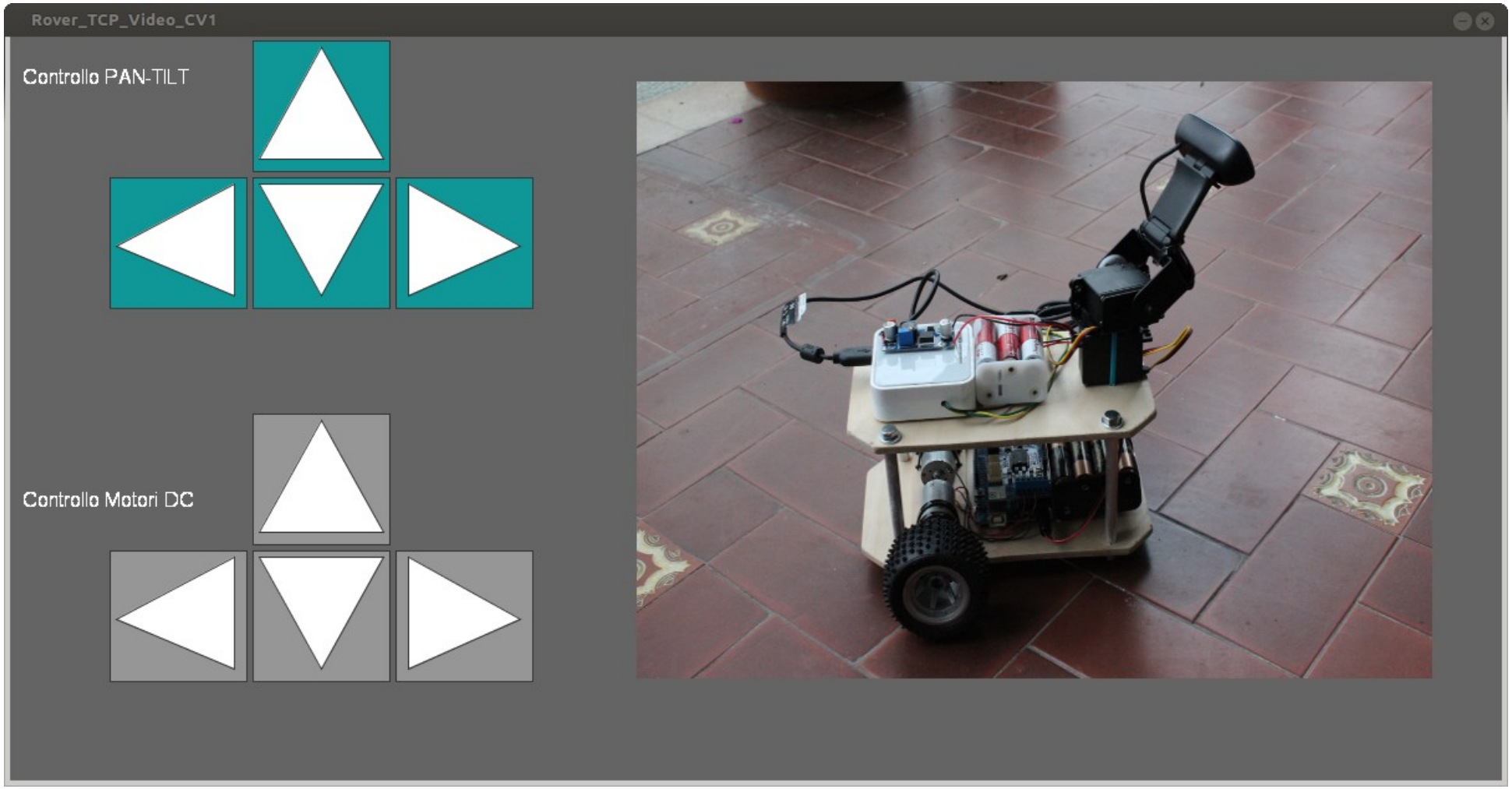
Arduino Rover WiFi



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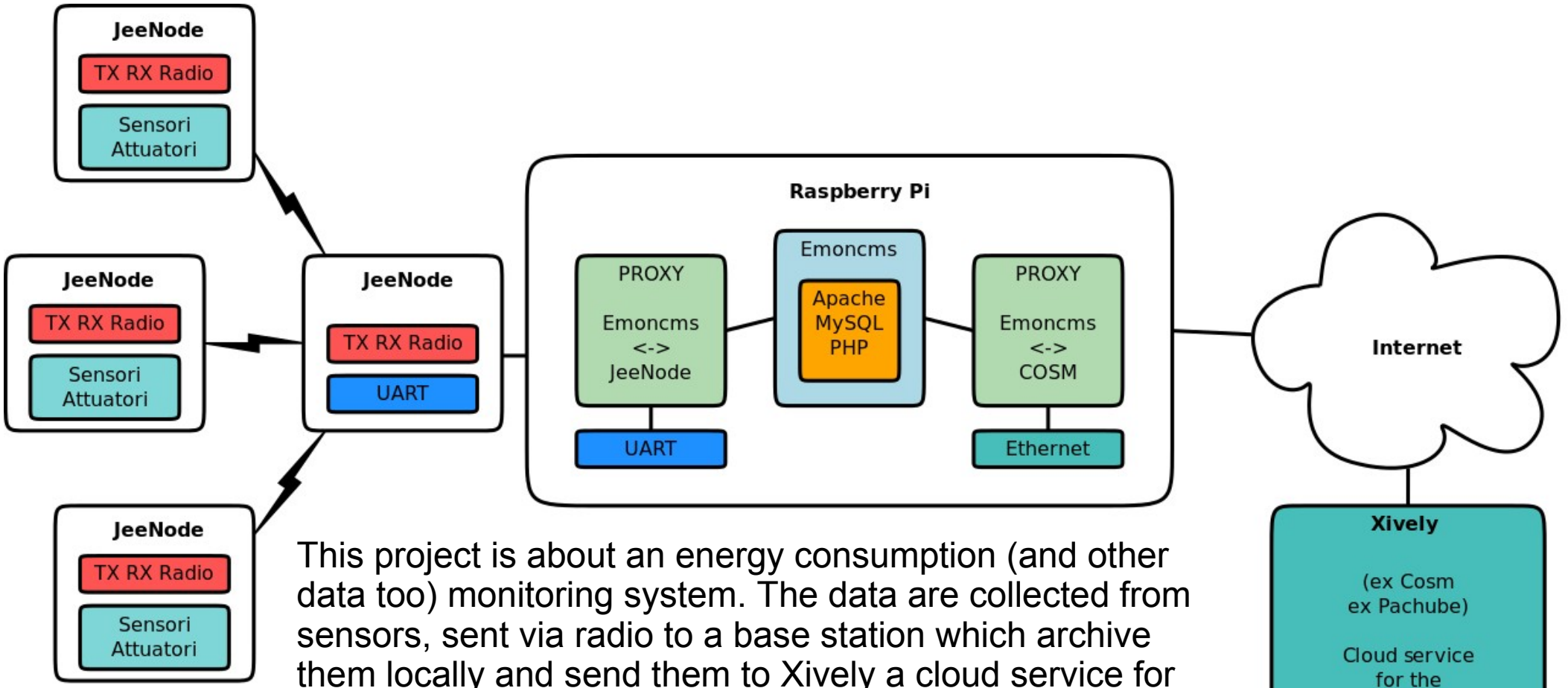
Energy Monitor



This project is about an energy consumption (and other data too) monitoring system. The data are collected from sensors, sent via radio to a base station which archive them locally and send them to Xively a cloud service for the internet of things (IOT).
Here we have a diagram with all the measurement system components.

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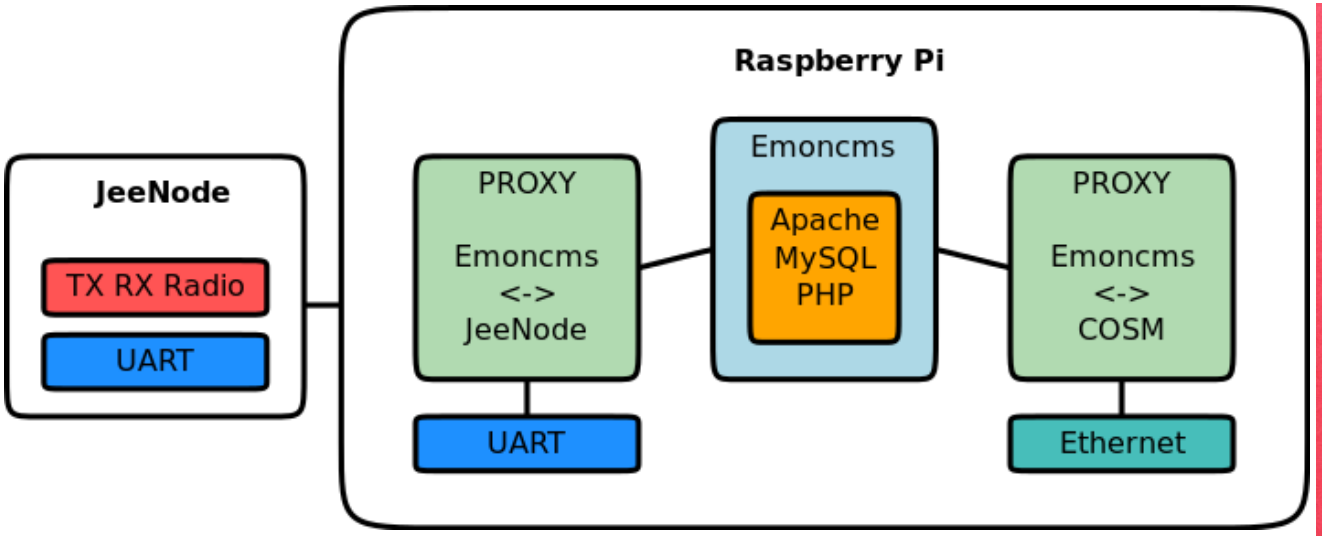
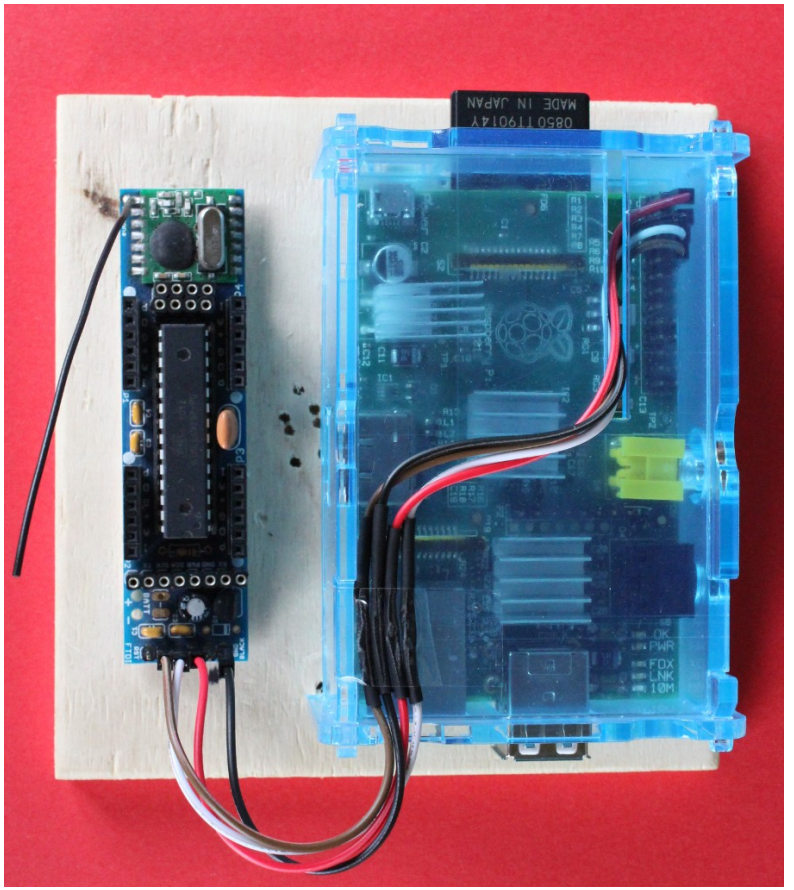
Energy Monitor





Here we can see the base station: both the diagram and the real image of the prototype.
It is made up by a Raspberry Pi, a little embedded PC with Linux as OS. A web application based upon Apache, MySQL and PHP implements the communication with the radio node, the data archiving (in a SQL DB) and synchronizes this data with Xively.

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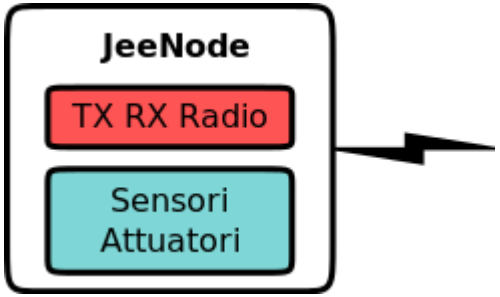
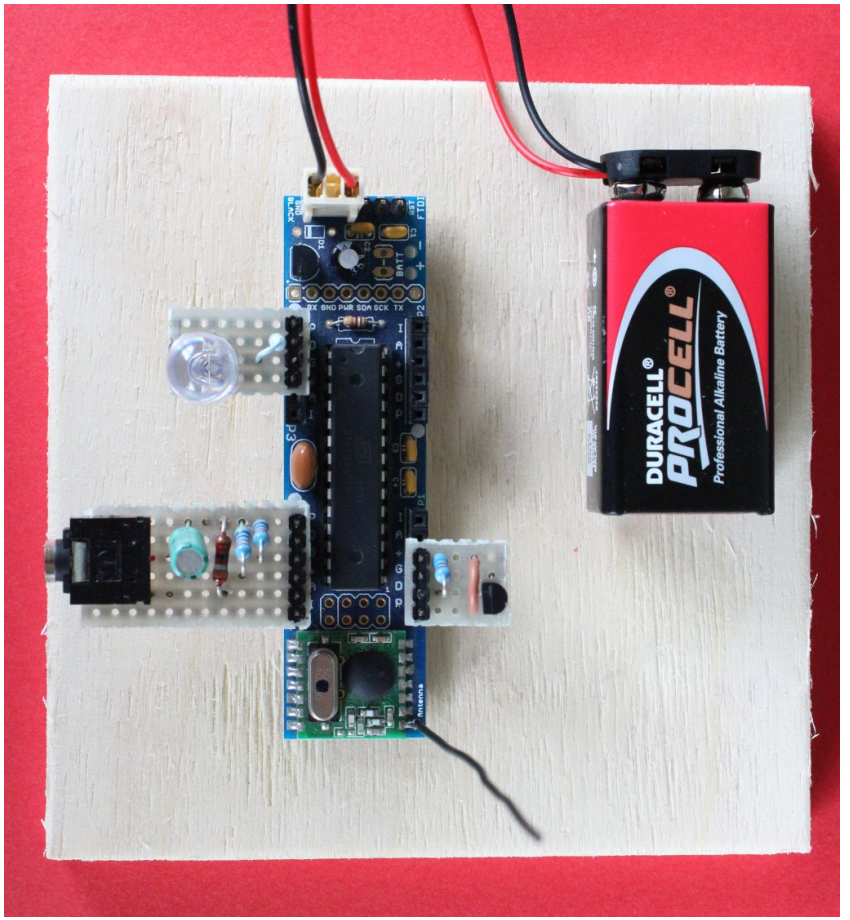
Energy Monitor



Each single node can get Temperature, Energy consumption and Light intensity data and send it to the base station. At the same time it can receive commands from the base station to turn on or off an electrical appliance (for the sake of simplicity here we have a single LED).



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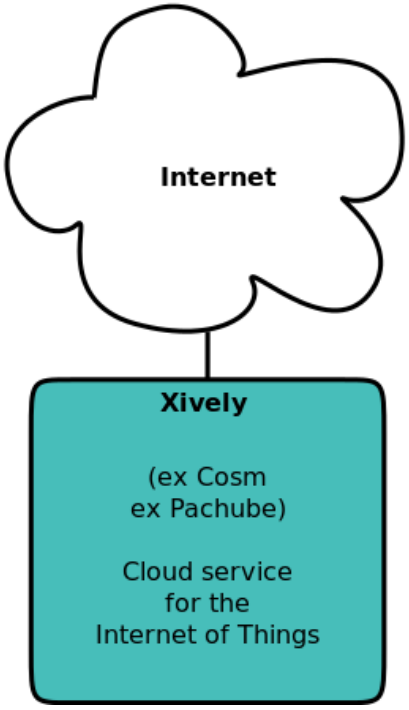

With the Xively API we can develop applications usable on Desktop PC as well as on smartphone or tablets. With this apps we can see data relative to various zones and control any kind of device both locally and remotely.

Energy Monitor