Connections

Connections scheme:



**MEGA:**

The Arduino Mega Board will have the different states to lead the calibration process. It will communicate with the Raspberry Pi by serial protocol using an USB wire. The following devices are connected to the Arduino Mega through an Arduino Shield installed:

* Switch: To start the calibration process (or abort it) and switch off the system. It is connected to a digital Input at the Arduino Mega .
* Button: It allows the operator to advance through the calibration process. It is connected to a digital Input at the Arduino Mega .
* End-stops. There are four in total, two for each shoe box. These devices detect if the shoes are inserted correctly. They are connected to a digital Input each one at the Arduino Mega .
* Led and buzzer: These devices help to the operator to know if the process is right or wrong. They are connected to digital outputs at the Arduino Mega .
* LCD: 16x2 characters display. It is used to show to the operators different messages to lead them through the calibration process. It is connected using I2C protocol to the Arduino Mega.
* IMUS: There are two IMUS in total, installed each one in a “shoe”. These IMUS are able to measure the variations of the hips and feet angles. They are connected using I2C protocol to the Arduino Mega .

**ZUM ZOWI:**

The Zum Zowi board, among other things, will have connected four servo motors responsible for moving the different joints. It will communicate with the Raspberrypi board using serial protocol by an USB wire. It will receive commands to execute the calibration process.

**RASPBERRY:**

This board will communicate with the Arduino Mega board and Zum board and will send commands from one to the other. It will communicate using serial protocol with an USB wire. This device also check the Arduino and Zum boards are connected when is required. Moreover, it is responsible for saving the calibration results to a remote and to a local database installed in itself.

It is possible to use a PC instead of the Raspberry Pi, as the system runs with a python program that can run using a computer, and the local data base can be installed in the same computer.