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Showroom at Litorale USI

This document aims at describing a list of installations that we would like to install at Litorale USI.
Each installation is in a status that needs some work to be done in order to become ready to be shown in a showroom.

A description of the installations is provided including their actual status and the work to be done in order to bring them operational.

The installations' names are as follows:

- 3D Printer
- Interactive Balance Board
- Table Football (Calcio Balilla)
- Table Tennis 3D
- The Smart House
- Thymio Robot
- WarpME

3D Printer

A 3D printer based on Arduino component able to print 3D object in plastic or chocolate.

Status: to be analysed; probably a general reconfiguration should be performed and the firmware should be verified for both activities, plastic and chocolate objects printing.

Size: 80x60x60 cm (both stored and in use)
Support: 1x table; 1x chair

Possible work to be done:

- Setup the printer and make it working again;
- Write a user manual describing how to setup the printer for both plastic and chocolate objects and how to run it. A troubleshooting section will be helpful in case of problems.

Interactive Balance Board

The balance is defined as the best relationship between the subject and the surrounding environment; resulting that the body, both in static and dynamic conditions, assumes an optimum balance according to the environmental stimuli it receives, and the motor program that adopts. Improving the balance is possible in various ways. This installation combines computer components and electronic technology-based Arduino. You can practice, record your movements and display your progress through graphs that will be calculated in real time by a computer.

Status: there are two balance boards that have to be analysed; one of them is not working at the moment.

Size: 50x50x15 cm each (both stored and in use)
Support: none

Possible work to be done:

- Analyse the status of both balance boards;
- Some solder should be refined;
- Some electronic component might be replaced, but we should have some replacements available;
- Write a user manual describing how to setup the balance boards and how to make them working properly. A troubleshooting section will be helpful in case of problems.

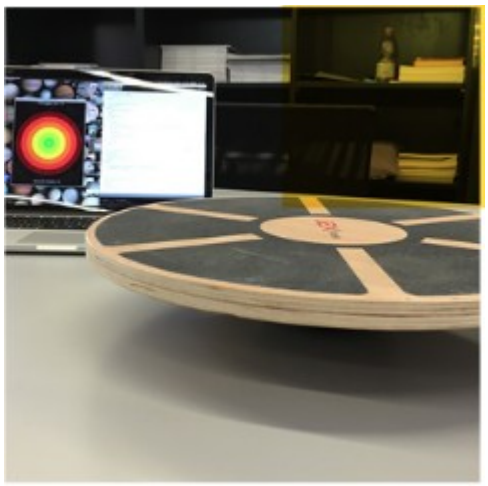


Table Football (Calcio Balilla)

Table football is a game that simulates a soccer game, in which players maneuver, in a special game table with side rails, by means of bars (or sticks), the shapes of small soccer players, trying to hit a ball with them to push it into the opponent's goal. This ball is usually made of white, solid plastic material with a diameter of 32 mm to 34 mm.
This table football ahs been extended by means of Arduino components with the goal to make it more interactive and with the aim to be able to automatically count the number of goals scored.

Status: the installation is dimissed since few years and should be mounted and analysed

Size: 140x80x90/130 cm (both stored and in use)
Support: none

Possible work to be done:

- Analyse the status of the table football;
- Restore the lights functionality and the automatic score feature;
- In case of need some electronic component might be replaced;
- Write a user manual describing how to setup the table football and how to make it working properly. A troubleshooting section will be helpful in case of problems.

Table Tennis 3D

Through this installation we present some possibilities for individual sports training in the table tennis field through 3D visualization in virtual environments.
The user has the opportunity to interact with the platform using modern instruments equipped with sensors capable of simulating and producing sensations actually perceived by the user.
The purpose is to give the user the opportunity to record his/her movements and view them in 3D with the aim of correcting and improving their performance. In this way the tool becomes an opponent and a coach to trust with the goal to refine their technique.

Status: although it is using an old technology, the installation should work without big efforts.

Size: 30x50x25 cm (beamer)
Support: at least 2 sqm of floor and a wall/screen for projection

Possible work to be done:

- Setup the the installation;
- Write a user manual describing how to setup the installation and how to run it. A troubleshooting section will be helpful in case of problems.

The Smart House

Consider your house, how smart you think you can turn it? Doing things like closing doors, opening windows, switching lights, decreasing TV sound, controlling AC, monitoring movements, time-of-the-day based behavior, ... all of these ideas are nice, useful and powerful, especially if they are put together with some intelligence behind to serve general purpose, furthermore, how nice would it be that controlling it remotely by your mobile phone.

Status: the installation is dimissed since few years and should be mounted and analysed.

Size: 80x60x45 cm (both stored and in use)
Support: 1x table

Possible work to be done:

- Analyse the status of the installation;
- Restore some of the functionality;
- In case of need some electronic component might be replaced;
- Write a user manual describing how to setup the table football and how to make it working properly. A troubleshooting section will be helpful in case of problems.

Thymio Robot

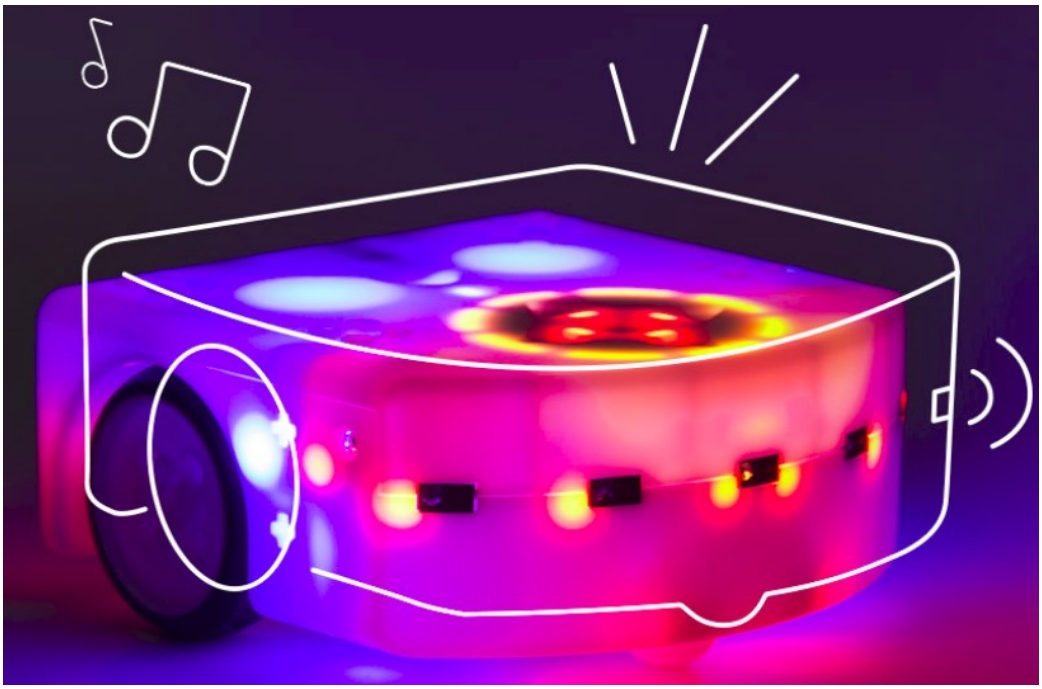
Thymio has been developed in the context of a collaboration between the MOBOTS group of the Swiss Federal Institute of Technology in Lausanne (EPFL) and the Lausanne Arts School (ECAL). For Thymio, the development was supported by the NCCR Robotics research program, while Mobsya association took part in the development and managed production and distribution.
The Thymio project started from the idea of offering children a modular affordable robot to let them discover digital technologies. From a first workshop between EPFL and ECAL, a robot built with different bare electronic boards assembled on any kind of support was born and called “Monsieur Patate”. Some time later, another version of this robot has been developed and called “Thymio”: a 4-block robot that you can assemble, arriving with some pre-programmed behaviours but that you couldn’t program yourself. One thousand of them have been produced and used to understand what people needed and wanted. A user study later, the list of features of the Thymio II robot were written down. One year later, the first Thymio II robots met their users.

Status: working.

Size: 10x10x5 cm each robot (both stored and in use); 170x120x10 cm track (in use) 85x120x2 cm (stored)
Support: 1x robot track/labyrinth or tape to build a temporary one

Possible work to be done:

- Give some hints on how to program the robots.



WarpMe

By harvesting the full power of mathematics, barycentric coordinates, and modern graphics cards, we created an interactive and intuitive face warping application.
Just stand in front of our touch screen, smile at the camera, distort your face by dragging some control points, and leave with a passport photo of the result!

Status: working.

Size: 100x40x200 cm (both stored and in use)
Support: 1x display holder

Possible work to be done:

- Setup the whole infrastructure namely, computer, display and small printer;
- Write a user manual describing how to setup the installation and how to run it. A troubleshooting section will be helpful in case of problems.