# DIY ELECTRONICS IN NEW MEDIA ARTS

PRESENTATION by IOANN MARIA

- PEOPLE DOING STRANGE THINGS WITH ELECTRICITY - DORKBOT / DORKBOT ALBA NETWORK
## DIY BIOFEEDBACK TOOLS FOR REAL-TIME AUDIO-VISUAL EXPRESSION
EXPERIMENTAL PROJECT ARTIFICIAL RAT

## DORKBOT - PEOPLE DOING STRANGE THINGS WITH ELECTRICITY -



**Dorkbot** is a group of affiliated organizations worldwide that sponsor grassroots meetings of artists, engineers, designers, scientists, inventors, and anyone else working under the very broad umbrella of electronic art.

The purpose of dorkbot meetings is to nurture a local electronic arts community and to encourage emerging, and established, artists to present new works for informal peer review.

Started by Douglas Repetto at the Columbia University Computer Music Center in 2000, Dorkbot has spread around the world, with over sixty chapters either planning or actively holding meetings.



**DorkbotAlba** is Edinburgh–based Scottish branch of Dorkbot. Regular sessions at DorkbotAlba evaluated in building the structures and first prototypes in my artistic research involving DIY electronics and robotics.

http://dorkbot.org/  http://dorkbot.noodlefactory.co.uk/wiki

Biofeedback is the process of becoming aware of various physiological functions using instruments that provide information on the activity of those same systems, with a goal of being able to manipulate them at will. Processes that can be controlled include brainwaves, muscle tone, skin conductance, heart rate and pain perception.

Biofeedback medical technology, such as the EEG, body temperature variations, heart rate, and galvanic responses, can be used to analyze human's emotions.

My artistic research about the **biofeedback technology** is investigating the most convenient capabilities for my future installation and real-time audio-visual performance projects referred to *human-computer interaction* and *interactive physical systems*.
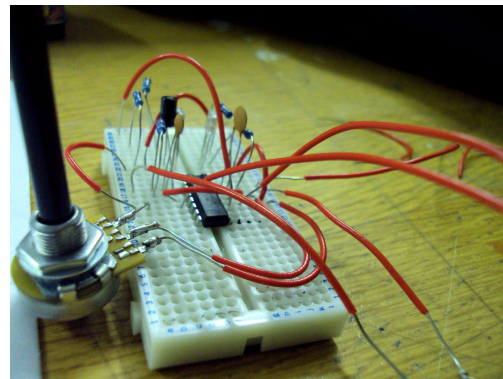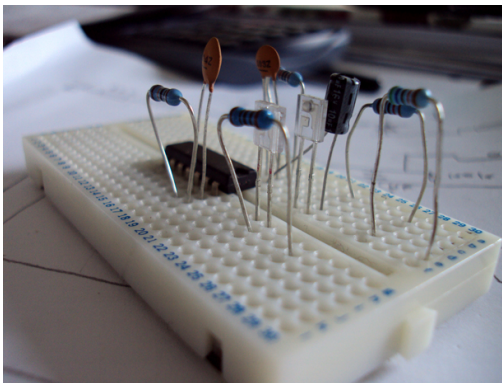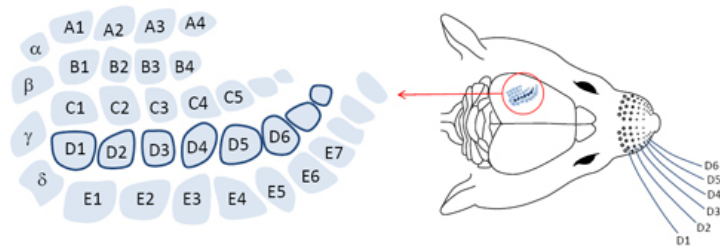



I am going to present the first tested prototypes of:
 - *GSR – Galvanic Skin Response reader,* measuring the electrical resistance of the skin,
 - *Heart Rate Monitor,* measuring the pulse of a body.

Both tools are controlled with the OS Arduino microcontroller and coded in Arduino and Processing open source programming languages.

EXPERIMENTAL PROJECT ARTIFICIAL RAT



Project is questioning the relationship between the human and machine, provoking an interaction between them. I am working on a creation of a **rat – robot**, which appears in human's environment, being **identical to the physical animal** in both behavior and appearance. In the closed experimental space, human will be forced to interact with the "animal", which actually is just a programmed mechanism. I want to play with the fact that the machine can easily **provoke strong emotional reactions in human**. This robot should understand human's feelings, thus using the **biofeedback technology**, changes in emotional state are going to be send as a signal for the rat so it can response to human's action. Machine has to look perfect, act naturally and should not bring human any distrust so it can truly affect him. The final bit of this game is when the human finds out that his emotions have been manipulated by nothing but the piece of programmed technology.

The further part of the project will test a contradiction in built for this purpose maze, making human find the way out from it, and rat – examining its correctness. A machine, a rat is **judging human's intelligence** this time. The data shall be then visualized and compared in the score of each viewer.
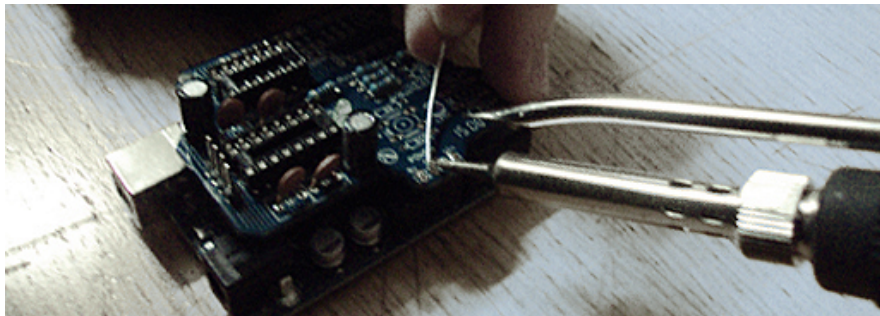


There are two main quests of this project:
- technical : building a perfect machine that is identical to the real animal, in both appearance and behavior
- socio-psychological : provoking a confrontation between the machine and human which results in human's emotional engagement.

Keywords:
human-machine relationship, interaction, emotionality, biofeedback, robotics, test, manipulation, social responses to communication technologies

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