Tangible Technologies for the Development of Play Skills in Autistic Children

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Play is an essential activity to develop cognitive, social and emotional competencies in childhood.
Children with disabilities are prevented from playing which affect their playing skills, experience a serious limitation in their learning potential.

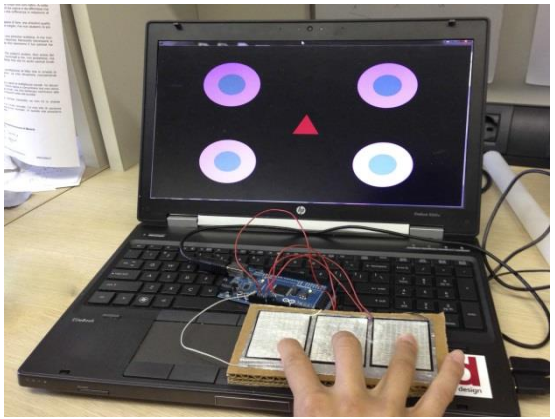
Autism Spectrum Disorder (ASD) is a lifelong disorder arising before the age of three and categorised as a pervasive developmental disorder (PDD). The scientific community agrees on defining autism as a “spectrum”.

photo: http://www.meteoweb.eu/

In relation to play, children with autism spectrum disorder in most cases prefer solitary play, and rarely engage in cooperative games.

photo: http://www.annacarreras.com

Second prototype
Haptic Stimuli Generator



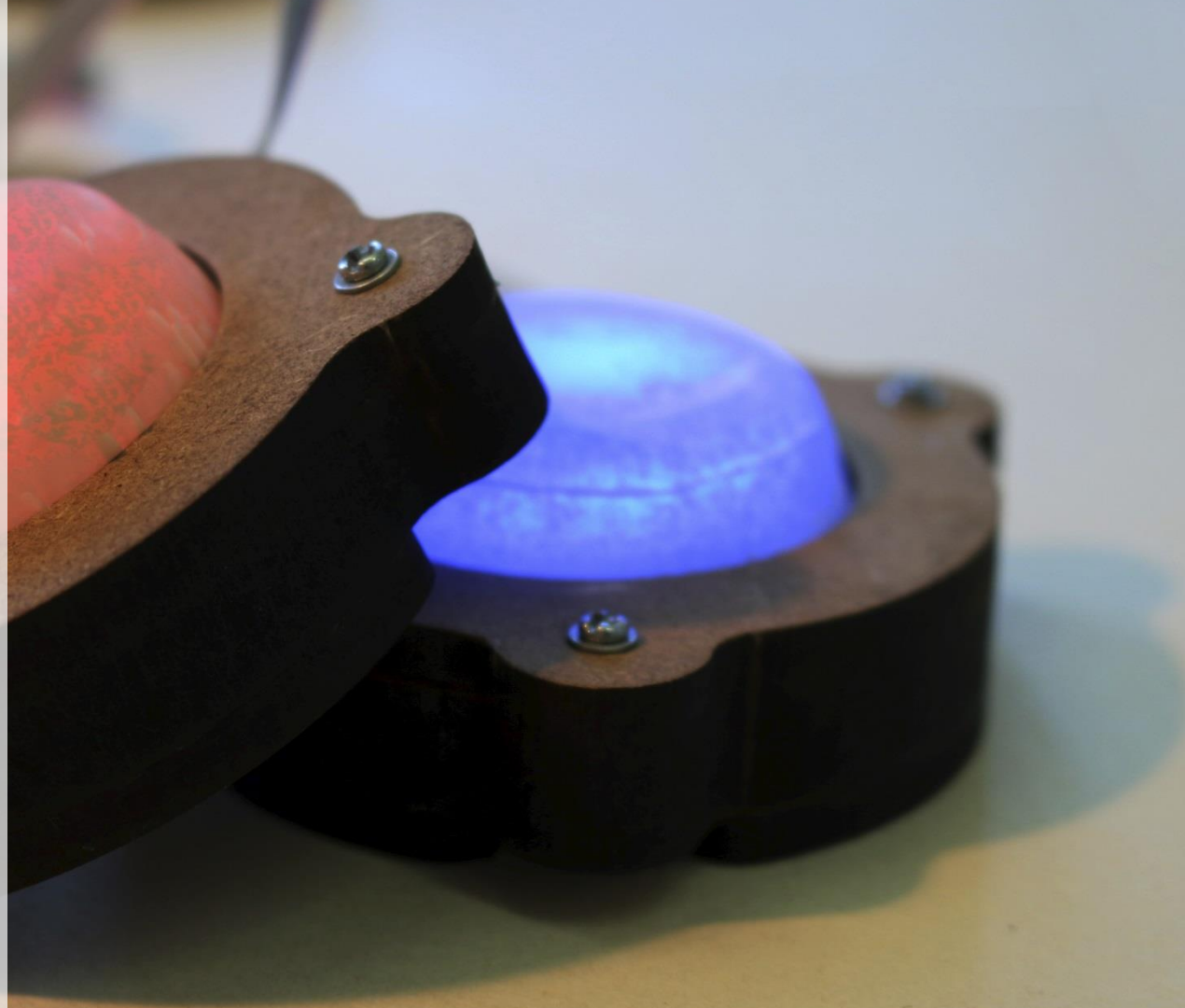
First prototype
Chaos-generative Musical Interface

Game of Stimuli

Research-through-design process

Game of Stimuli (GoS) is an interactive tangible and modular game for children and adolescents diagnosed with Autistic Spectrum Disorder.

The system is currently composed of five modules.

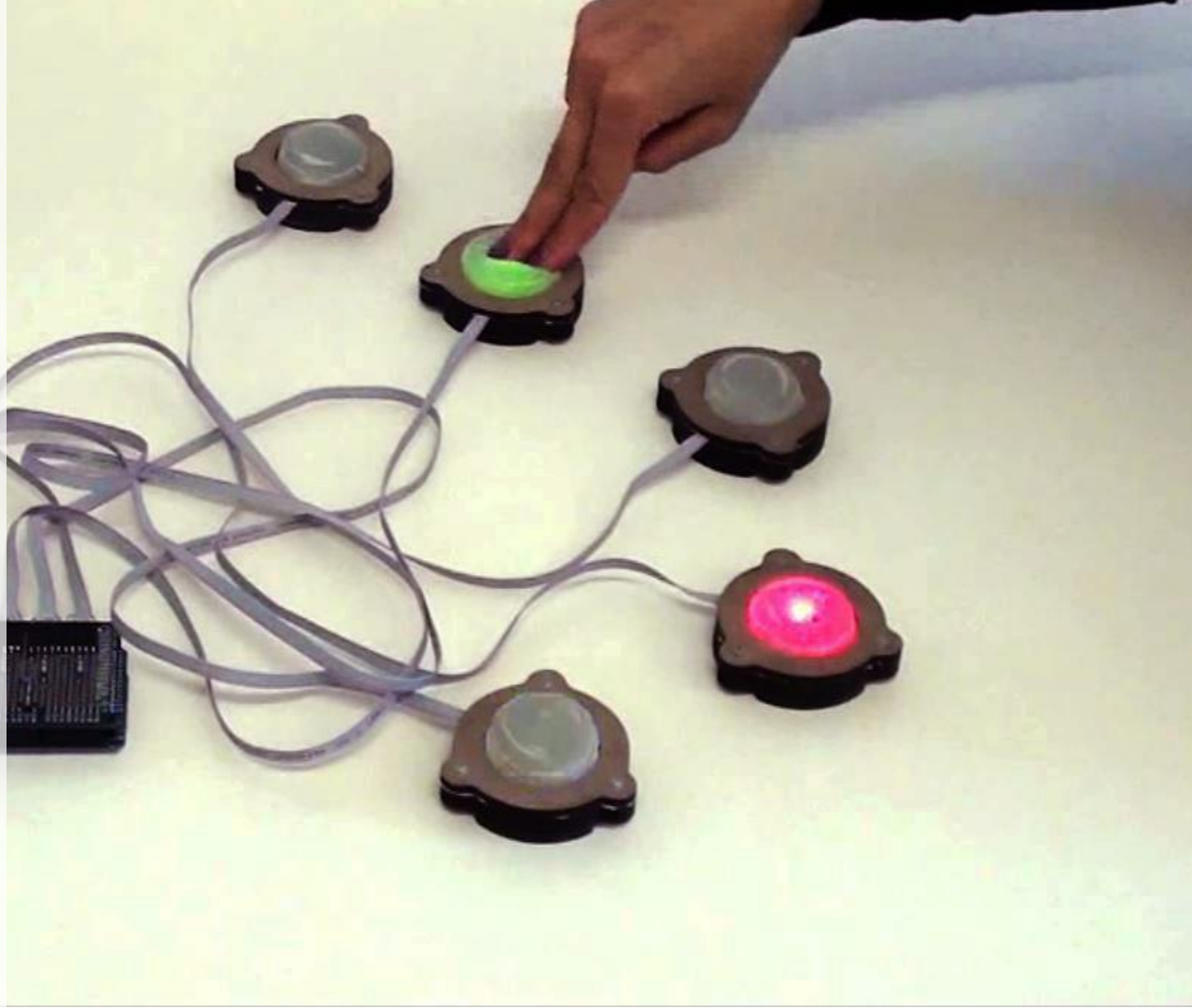


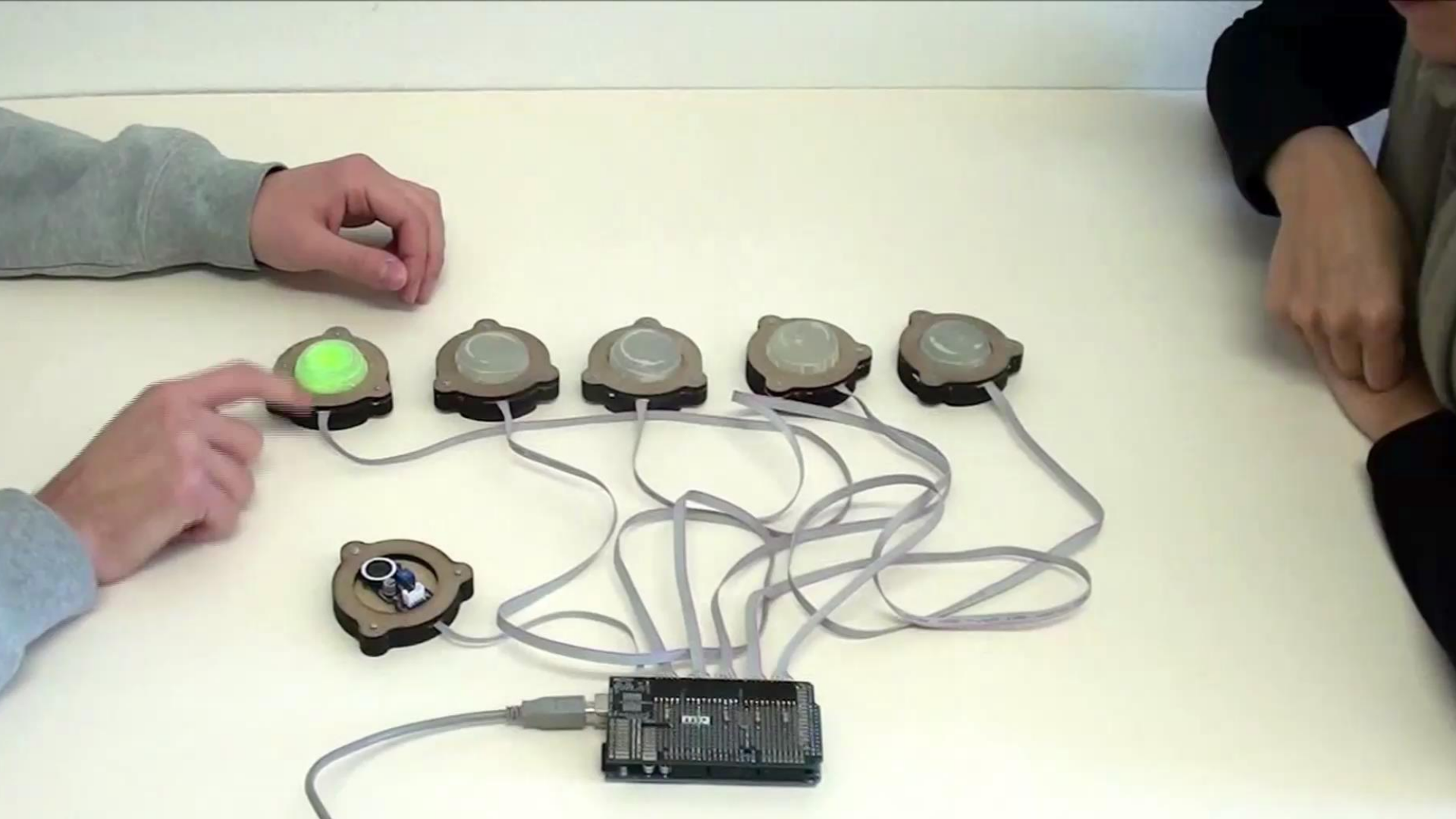
Each module consists of a block with a push button on top integrated with a pressure sensor and a RGB LED.

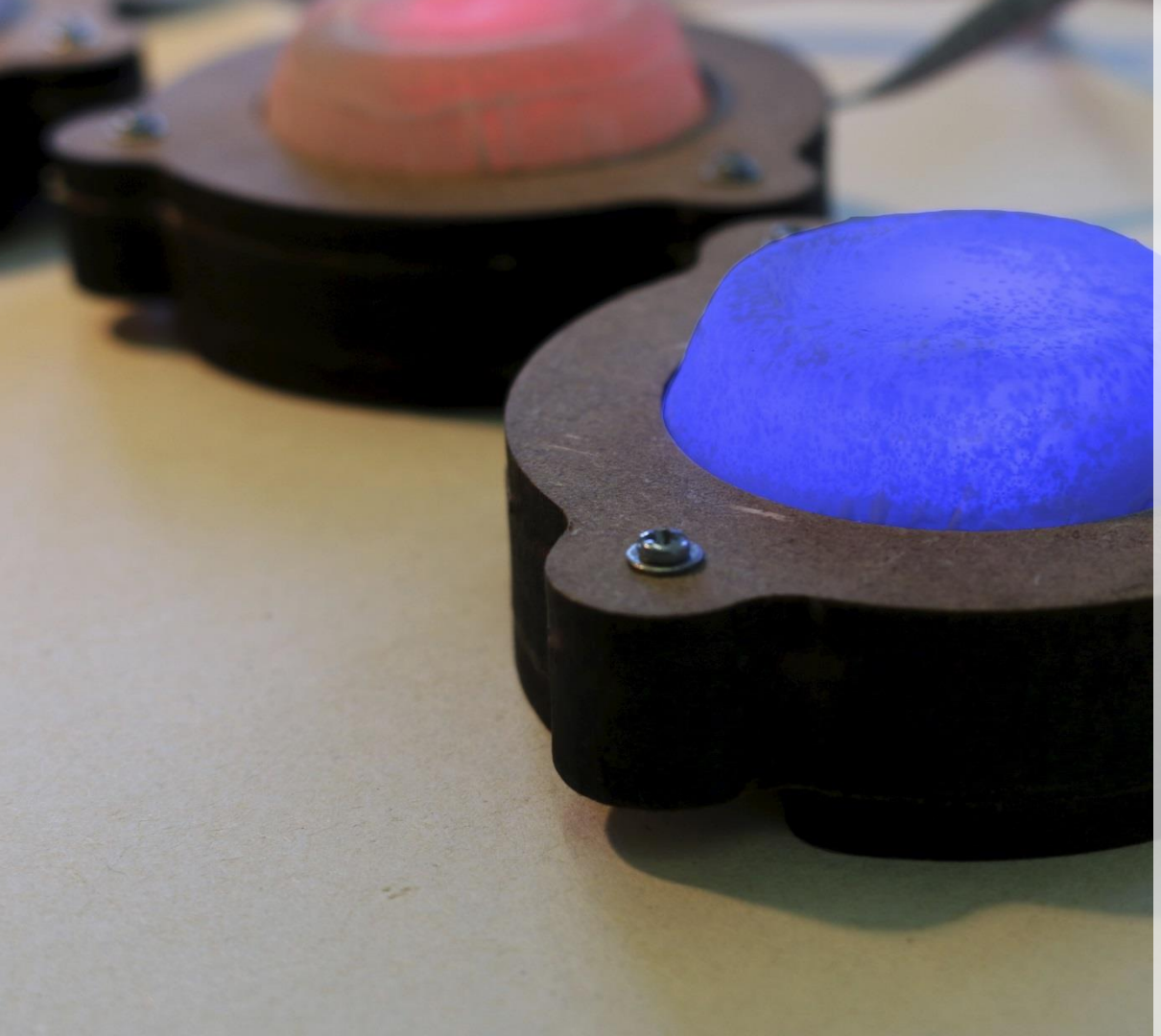
One additional block including a piezo speaker completes the set-up.

The play scenarios were categorised in three main groups: cause and effect, turn-taking and collaborative.

Each scenario demanded a different level of engagement and interaction, from practice play to rule-based play.





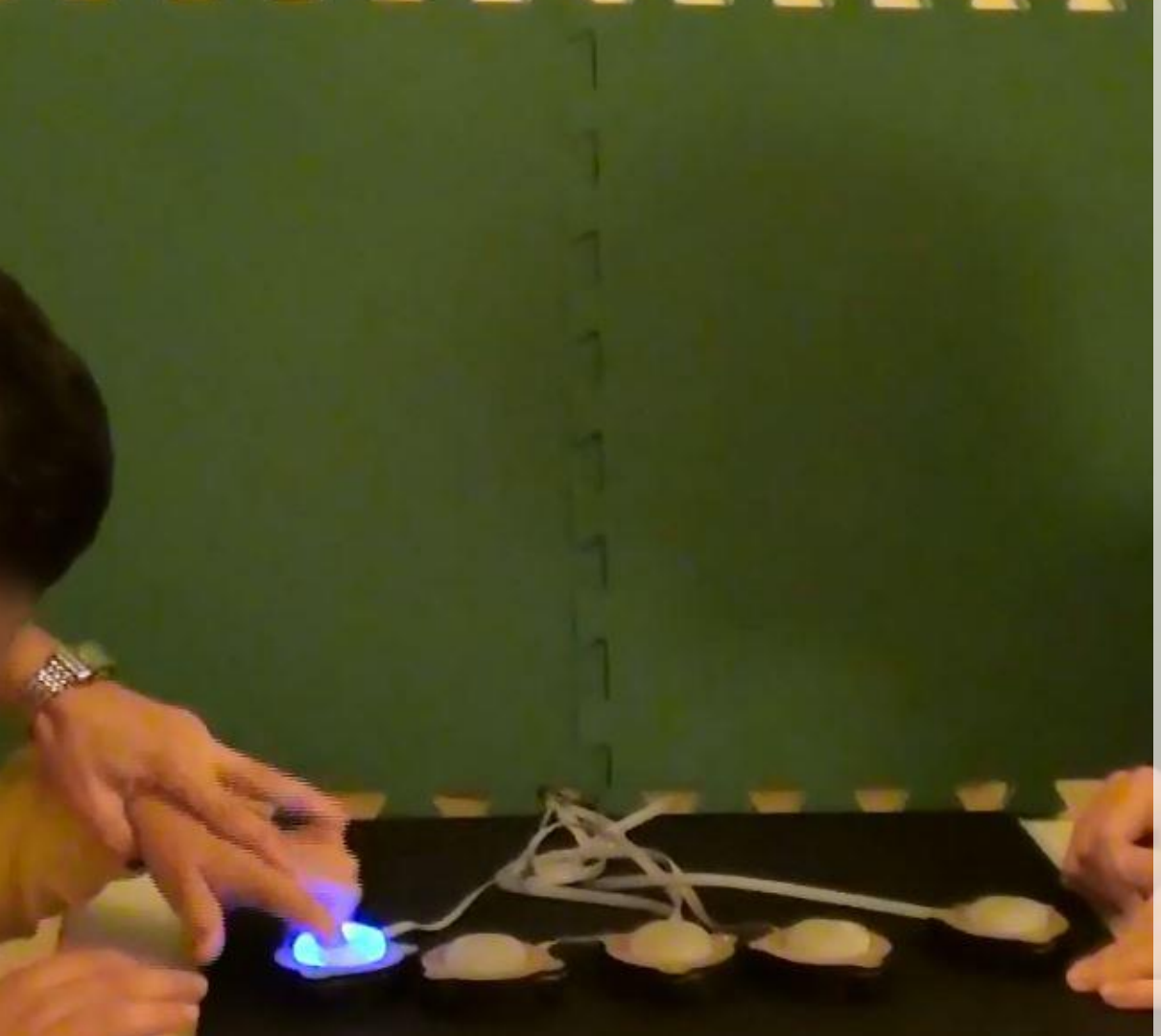


GoS was tested with six autistic children, ranging in age from 10 to 16

4 children with low-functioning

2 children with medium-functioning

The aim of the study was to test their stage of play development, and to engage them in play scenarios at different levels of complexity.



The sessions were designed to last approximately thirty minutes, but they were subject to changes, according to the attention span of the children and response behaviour.

Reflection in action

Children with low-functioning

Attention: 2 - 8 minutes.

Mood: explorative.

Autonomy: none.

Relationship with the experimenter: none.

Reflection in action

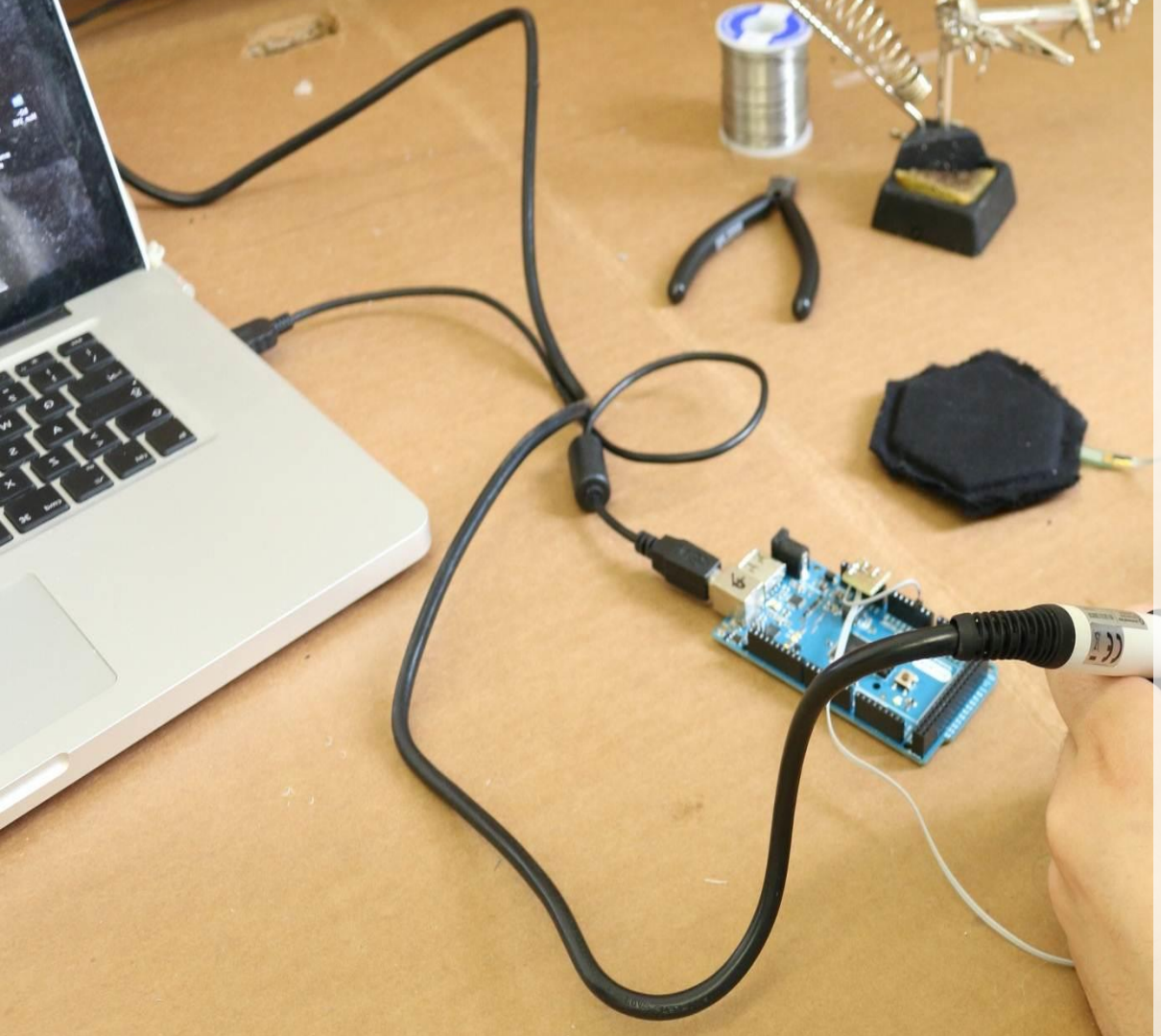
Children with medium-functioning

Attention: 15 - 22 minutes.

Mood: pleasant.

Autonomy: present.

Relationship with the experimenter: eye contact and collaborative relationship.



Reflection on action

- Test the play skills of the children
- Importance of physical prompt and verbal prompt
- Modularity
- Material qualities and properties
- Simplicity of the game

Future development

A tablet application to control the system without the assistance.

Configure the game, type of stimuli, play rules, play styles.

Records the progress of each child.

Thank you for your attention!

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