UNIVERSITY OF GENOA
DEPARTMENT OF INFORMATICS, BIOENGINEERING, ROBOTICS AND
SYSTEMS ENGINEERING
MASTER'S PROGRAM IN BIOENGINEERING

Thesis Project Form

Title (tentative):   Reading-writing exercises in Virtual Reality for disabilities

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Description

Motivation and application domain

Some disabilities, like the RETT syndrome, severely affect the cognitive capabilities of people. However, exergames and Virtual Reality may help them to maintain and recover some of the lost functions.

General objectives and main activities

This thesis aims to develop an exergame based on non-immersive Virtual Reality to exercise reading-writing capabilities for people affected by the RETT syndrome.

The thesis will address the following challenges:

- to devise and implement robust techniques to interact with the exergames, considering the physical disabilities of the users. Interaction methods will include hand-tracking and eye-tracking

- to devise a simple and customizable user interface to be used both by the patients and the caregivers

- to allow the easy maintenance of the sw, and the possibility of customization by the caregivers (e.g., to add new words). In particular, the virtual environment should adapt when new words are added (e.g. if we add CAT, a new environment with cats must be generated)

NOTE: The work will be conducted in collaboration with AIRETT (Italian Association for the RETT Syndrome), and the candidate should be available to meet with doctors and caregivers who will co-supervise the work.

Training Objectives (technical/analytical tools, experimental methodologies)

-Development of the exergame using Unity 3D
-Integration with hand tracking and eye tracking
-Storage and analysis of all the parameters useful to track the outcome of the training
-User testing
-Preliminary tests, supervised by AIRETT, with users affected by RETT syndrome

Place(s) where the thesis work will be carried out: DIBRIS Valletta Puggia, AIRETT Verona

Additional information

Pre-requisite abilities/skills: Programming in C++ or C#

Maximum number of students: 2