



## Thesis Project Form

**Title (tentative):** An interactive walk in Virtual Reality guided by eyes

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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 explore known and unknown environments.

The thesis will address the following challenges:

- to devise and implement robust techniques to interact with the exergame, considering the physical disabilities of the users. The main interaction method will be eye-tracking. Optional, as a further development, the exergames could include using a treadmill.
- to devise a simple and customizable user interface to be used both by the patients and the caregivers
- to capture and insert into the VR natural environment, giving to the users/caregivers the possibility of choosing the level of details and photo-realism.
- to allow the easy maintenance of the sw, and the possibility of customization by the caregivers (e.g., to add new environments).

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 eye tracking (possible further extension with a treadmill)
- 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 Villetta Puggia, AIRETT Verona

### Additional information

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

**Maximum number of students: 2**