



## Thesis Project Form

**Title (tentative):** A serious game for the assessment of social apathy in non-immersive virtual reality

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### Description

#### Motivation and application domain

The goal of this thesis is to develop a serious game for the assessment of social apathy, characterized by a reduction in the motivation to interact with other people. Apathy can be an early sign of cognitive decline that might lead to dementia (e.g. Alzheimer's disease), thus its detection is important.

#### General objectives and main activities

Due to the rising average lifespan, we are witnessing a dramatic increase in the incidence of age-related disorders such as dementia, which is often preceded by a pre-dementia stage, known as Mild Cognitive Impairment (MCI). The detection of cognitive impairment at the MCI stage is clinically useful: it has been shown that non-pharmacological interventions at this stage can stabilize or even improve patients' cognitive functioning. The objectives are to develop a serious game for the early detection of social apathy and to assess its effectiveness. It is necessary to study the literature to consider the available approaches. Then, to develop a storytelling of the game with the support of psychologists by designing the interactions and the visual appearance of the serious game. Specific attention will be paid to the gamification of the clinical procedure for apathy detection, and to the adaptation of the interface for the use of elderly people with cognitive disorders (simple and clear design, etc). In this context, the patient will interact with a cartoon-like game. The hardware platform will be mainly non-immersive virtual reality, e.g. tablet. An experimental session with healthy volunteers will assess the developed serious game, possibly patients might be involved. The experimental outcomes will be analyzed.

#### Training Objectives (technical/analytical tools, experimental methodologies)

The serious game will be developed using Unity 3D (scripting in C#). Optimization of the serious game will be performed in a loop of development and assessment. Participation in the definition of an experimental protocol. Participation in experimental sessions. Analysis of experimental data.

**Place(s) where the thesis work will be carried out:** DIBRIS Valletta Puggia (Perception&Interaction Lab) and Universit  C te d'Azur (Nice, FR).

### Additional information

**Pre-requisite abilities/skills:** Programming in C++ or C#, Basic knowledge of Unity3D

**Maximum number of students:** 2