



## Thesis Project Form

**Title (tentative):** A virtual reality application for the assessment of social interactions with realistic avatars

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### Description

#### Motivation and application domain

Virtual reality can be used in training tasks in different fields, such as industrial and medical ones. The presence of human avatars in the virtual environment might have positive effects on the ongoing task. Though the effects might be of different importance in the two mentioned fields, the thesis focuses on the medical domain, specifically for the assessment of social interaction.

#### General objectives and main activities

By considering the medical domain, we should pay attention to providing realistic avatars in virtual reality (VR) by avoiding undesired side effects (e.g. their human-like appearance might evoke an emotional response that produces a feeling of unease since they are realistic but different with respect to real people). The thesis aims to develop a set of VR scenes where realistic avatars dynamically interact by following specific storytelling defined in collaboration with psychologists of ASL1 (e.g. the scenes could be about social behaviors and interactions). Moreover, a VR application will be developed to manage the scenes and collect the users' data. In this thesis, we will exploit the MetaHuman of Epic Games by using it in VR immersive environments. The developed application will be used to create some example VR scenes to assess the easiness of the application use. Moreover, these VR scenes with realistic avatars will be tested to evaluate their efficacy in mimicking real human interactions and tasks.

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

VR scenes with realistic avatars will be developed by using the MetaHuman and Unreal engine. Optimization of the VR scenes and the application 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)

### Additional information

**Pre-requisite abilities/skills:** Programming in C++ or C#, basic knowledge of game engines

**Maximum number of students:** 2