Call for application for research scholarships
for post-graduate international candidates
RESEARCH PROJECT N. 7

Title

Multi-user collaborative environments in Augmented and Virtual Reality

Scientific responsible (name, surname, role)

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Short description of the research activity (max 250 words)

The goal of the project is to provide advanced and effective technological tools capable of fostering and supporting, making it simpler and more intuitive, the collaboration between multiple users involved in cooperative tasks. Possible application scenarios range from collaborative design to learning, serious games and information sharing (e.g., for control and debriefing tasks).

In particular, the project will focus on analyzing the contribution of Augmented and Virtual reality to the aforementioned goals. The advantage of AR technologies, which seamlessly blend real and virtual environments, is to provide tools supporting a multi-user, natural, face-to-face interaction. On the other side, virtual reality enables the development of shared environments that guarantee an effective communication and interaction between different (and possibly remote) users and with the virtual objects.

Other goals of the project are (i) to guarantee the integration of multiple interaction and visualization devices, ranging from wearable (Hololens, Oculus and Vive) to mobile devices (Android or iOS tablets), and (ii) to guarantee the adaptivity of the visualized information (e.g., to provide, within the same application, users with different roles with different views of the same object, or with different information associated to the same object).

The project is organized along three main research activities:

1. Analysis of the state-of-the art (theoretical frameworks, design frameworks and best practices)
2. Analysis of suitable interaction mechanisms/metaphors for the different devices, and their integration
3. Analysis of the techniques and tools allowing an effective user adaptation of the displayed information and of the functionalities provided by the system

Specific requirements (experiences, skills)

Good knowledge of spoken and written English language. Expertise in programming languages (C++/C#). Basic knowledge of AR and VR technologies

Website of the research group (if any)

Computer Graphics & Vision Group (CG&VG) - http://www.polito.it/cgvg

Keywords (min 3, max 6)

Augmented reality, Virtual reality, multi-user environments, collaborative tasks, Human Computer Interaction

Research Area (max 1)

- Computer Engineering