Name Project: **Hybrid games based in emotional, multimodal interfaces and social agents (National project: TIN2015-67149-C3-2-R)**

Acronym: JUGUEMOS

Summary of the project: Nowadays, different human-computer interaction paradigms (such as multimodal, affective, ubiquitous and tangible interfaces, augmented and mixed reality, embodied conversational agents,…) that overcome the traditional WIMP paradigm, coexist. The common point between all them is the search of natural and multimodal interaction (through several human communication channels) embedded in the user's physical environment (by sensors and actuators in it). In fact, there is a convergence of paradigms in which the attention is focused in user experience. The most suitable way of interaction and/or visualization are selected for each case.

However, the progress in those emerging paradigms is slowing down because of the complexity of prototyping the corresponding applications. The development of informatics applications that adopt these interaction paradigms implies the integration of physical and virtual elements. Moreover, social elements like user's mood or group behavior, must be considered, including a new dimension of complexity to post-WIMP computer applications, and so that, slowing their advances.

The new interaction paradigms have a clear application field in the videogames. The recent research line of pervasive games aims to eliminate the gap between the traditional game and the videogame building a "continuous" between the game experience and the platform in which the game is developed. Pervasive games show great possibilities either in their ludic and their educational (serious games) aspects. Additionally, their features of spatiality (natural mix between digital and physical information), sociability (encouraging group activities) and customization (adapting to the users characteristics and context), open the opportunity of using them with children with special needs that have limited interaction with more traditional methods.

The aim of this coordinated Project is to define a conceptual framework, a methodology of design, and a set of software tools that give support to the design and development of multimodal pervasive games. The multimodal systems to integrate are:

- Tangible devices, either tangible tabletops (interactive tables) or Smart-Objects
- Capture Systems: set of devices for getting information of the user context, either of the immediate environment, as information about the user (postures, gestures, biometrical signals, …)
- Social Agents able to interact with the user in a natural way, through a virtual human interface, or through a robotic device with social and affective abilities.
- Mobile platforms: smartphones, tablets and wearables devices.

The final objective consists in making easier to prototype pervasive games that integrate the latest human-computer interaction paradigms and that allow to study the therapeutic and educational potential of pervasive games in different fields related with childhood and, in particular, in children with special needs.

Key Words: Hybrid games, multimodal systems, affective computing, social agents, child-computer interaction, framework for game creation, EEG processing, Deep Learning, biosensors…