ICTH PhD

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Dr. John Edison Muñoz Cardona

University of Waterloo, Canada

https://sites.google.com/view/johnhci
Email: john.munoz.hci@gmail.com

Robo Ludens: A game design taxonomy for human-robot interaction

Abstract: The use of games as vehicles to study human-robot interaction (HRI) has been established as a suitable solution to create more realistic and naturalistic opportunities to investigate human behavior. In particular, multiplayer games that involve at least two human players and one or more robots have raised the attention of the research community. This talk summarizes a scoping review to qualitatively examine the literature on the use of multiplayer games in HRI scenarios employing embodied robots aiming to find experimental patterns and common game design elements. We found that researchers have been using multiplayer games in a wide variety of applications in HRI including training, entertainment, and education, allowing robots to take different roles. Moreover, robots have included different capabilities and sensing technologies, and elements such as external screens or motion controllers were used to foster gameplay. Based on our findings, we propose a design taxonomy called Robo Ludens, which identifies HRI elements and game design fundamentals and classifies important components used in multiplayer HRI scenarios. The Robo Ludens taxonomy covers considerations from a robot-oriented perspective as well as game design aspects to provide a comprehensive list of elements that can foster gameplay and bring enjoyable experiences in HRI scenarios.

CV: I am interested in using human body signals to create more "humanized" assistive technologies based on games and interactive systems. My research has been applied mainly in healthcare scenarios from physical activity promotion for the seniors to neurorehabilitation games for stroke patients. I got a B.S in Engineering Physics and a Master in Bioelectricity from the "Universidad Tecnológica de Pereira" in Colombia and my PhD in Human Computer Interaction at the NeurorehabLab (UMA/M-iti), part of the Laboratory of Robotics and Engineering Systems (LARSyS) in Portugal. I'm currently a PostDoctoral Fellow at the Systems Design and Engineering Department of the University of Waterloo (Canada) working in the ITWIL and Social and Intelligent Robotics research laboratories. I am also adjunct professor of Game Design at the Universidad Tecnologica de Pereira in Colombia.

Prof. Silvia Rossi – silvia.rossi@unina.it

UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II