Lecture: 'Spatial models applied to describe real scenes and to enable reasoning in computer games'

Data: venres, 23 xullo, 2021 -11:00 - 12:30

Lugar: CiTIUS Assembly Hall - Microsoft Teams

Poñente(s): Zoe Falomir (Universitat Jaume I)

Idioma: Inglés

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On one side the challenge is to propose approaches to interpret space and communicate about it as humans do. For that, smart systems can use computer vision and machine learning algorithms to analyse point clouds for recognising objects. Then, addressing the following research questions is crucial: which kind of spatial features must the system describe? topology? location? direction? which reference frames are used? Relative to the observer or to the object? Intelligent systems must have common grounding with users so that they can align representations and communicate with each other (i.e. dialog). On the other side the challenge is to propose approaches which solve spatial tests carried out to measure humans' intelligence and to apply these approaches in smart systems (i.e. computer games, robots) so that they can improve their spatial thinking, but also help improve humans' spatial thinking by providing them feedback. For that, addressing the following is decisive: how can we improve spatial perception in smart systems so that they can reason about object perspectives? Can spatial cognitive tests applied to people be used to model spatial logics?

About

I have recently started a new position as Ramon-y-Cajal professor/researcher at Universitat Jaume I (UJI), Castellón, Spain. Before that, I have been a postdoc researcher for 7 years at the Spatial Cognition Center, at the University of Bremen, Germany, where I was principal investigator in projects bridging the gap between AI and spatial cognition (see further details). I am a doctor engineer in computer science. I got my joint PhD title by UJI, Spain (Dr.) and also by University of Bremen (Dr.-Ing.). I also carried out research transfer to industry at Cognitive Robots SL where I applied results of my PhD thesis to the automation of scrubber machines and automatic mosaic assembling. I got the Castellón City Award for Experimental Sciences and Technology and the Extraordinary Prize for the most outstanding PhD at UJI. My research expertise lies in Qualitative Spatio-Temporal Reasoning applied to robotics and to ambient intelligent systems. Recently I led a new research line on defining qualitative models for solving spatial reasoning challenges to help people to improve their spatial cognition skills. Through all my research experience, I developed a multidisciplinary background which, apart from Qualitative Reasoning, Knowledge Representation techniques and Human-Machine Interaction, also includes Machine Learning, Colour Cognition,

Bioinformatics, Geographic Information Systems and Creative and Spatial Problem Solving.