UNIVERSIDAD DE GRANADA

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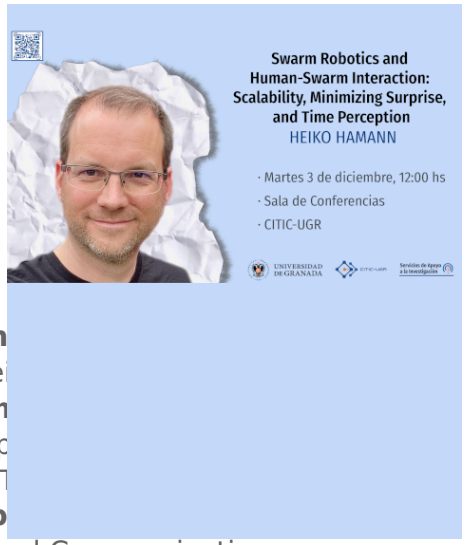
Conferencia: Swarm Robotics and Human-Swarm Interaction: Scalability, Minimizing Surprise, and...

03/12/2024

Conferencia



- **Title: Swarm Robotics and Human-Swarm Interaction: Surprise, an**
- **Speaker:** He
- **Date and tim** 2024, 12:00 p
- **Location:** CI
- **Organised b** Information and Communication Technologies of the University of Granada (CITIC-UGR).
- **Contact:** Héctor García de Marina.

Biografy:

Since 2022 Heiko Hamann is professor for Cyber-physical Systems at the University of Konstanz, Germany, and member of the "Centre for the Advanced Study of Collective Behaviour" in Konstanz, Germany. His main research interests are swarm robotics, bio-hybrid systems, evolutionary robotics, and modeling of complex systems. He enjoys working in multi-disciplinary teams with ethologists, plant biologists, architects, and psychologists. Heiko Hamann is author of the book "Swarm Robotics: A Formal Approach" and is editor-in-chief of the Swarm Intelligence Journal since 2023.

Abstract:

An essential advantage of swarm robotics (decentralized large-scale multi-robot systems) is the assumed maximal scalability with system size (i.e., number of

robots). However, once swarm density (robots per square meter) is increased, the situation turns out to be complex. We study how to choose a good team size.
We look into the state of the art of Active Inference (predictive modeling to guide decisions and perception actively) for collective behavior by trying to answer the question: How can swarm members choose actions that minimize future surprise?
Another key future aspect of swarm robotics is human-swarm interaction. In the last part of the talk, we look into the very specific effect of robot swarms on the operator's subjective time perception. We analyze physiological data of human (swarm) operators using methods of machine learning.