Universität Konstanz

Computer and Information Science

Fachbereichs-kolloqium

Summer semester 2024

Title

Blockchain technology for mobile multi-robot systems

Speaker and Title

Andreagiovanni Reina (University of Konstanz)
https://www.giovannireina.com/

Time and Room

April 24th (Wednesday)
1:30pm - 3:00pm
ZT 1204 (Data Theatre)

Abstract

Blockchain technology generates and maintains an immutable digital ledger that records transactions between agents interacting in a peer-to-peer network. Initially developed for financial transactions between human agents, the technology could also be used across a broader spectrum of applications, providing transparency, security and trust without the need for a central authority. In this seminar, I will discuss how blockchain technology can enhance mobile multi-robot systems. This enhancement includes ensuring that autonomous robotic agents adhere to applicable laws, are identifiable and accountable for their behaviour, are capable of identifying and neutralizing malfunctioning robots and can actively participate in economic transactions for the exchange of goods and services. Discussing the first applications, we highlight the open challenges and describe the research directions that could reshape the mobile multi-robot research field in the coming decades.

Speaker's Bio

Andreagiovanni Reina is a Research Group Leader of the Centre for the Advanced Study of Collective Behaviour of the University of Konstanz and Max Planck Institute of Animal Behavior, Germany. His research is highly interdisciplinary in both its scope and its methodology, with numerous contributions to a variety of disciplines, including computer science, robotics, theoretical biology, physics, cognitive neuroscience and psychology. Andreagiovanni's interdisciplinary approach consists of combining techniques from dynamical systems theory, statistical physics, network science, statistical optimality theory, multiagent simulation and large-scale robotics. Andreagiovanni has been a Research Fellow in Collective Behaviour at the Interdisciplinary Institute for Artificial Intelligence (IRIDIA) of the Université Libre de Bruxelles, funded by the Belgian F.R.S.-FNRS as a Chargé de Recherches. Previous to that, Andreagiovanni was a Research Fellow at the University of Sheffield (UK) from 2015 to 2020. He holds a PhD in Applied Sciences from IRIDIA, Université Libre de Bruxelles, and an MSc in Computer Engineering from Politecnico di Milano, Italy. He has been a researcher in several European projects on distributed robotic systems since 2009.