

Track on Intelligent Robotics and Multi-Agent Systems

The ACM Symposium on Applied Computing (SAC) has been a primary gathering forum for applied computer scientists, computer engineers, software engineers, and application developers from around the world. The technical track on Intelligent Robotics and Multi-Agent Systems (IRMAS) will be organized for the ninth time in SAC 2023, exploiting the inherent synergy between Robotics and Multi-Agent Systems (MAS), thus aiming to bring together these highly related and exciting research fields. Robotics is a multidisciplinary research area that presents an enormous potential. It concerns developing intelligent robotic systems that are capable of making decisions and acting autonomously in real and unpredictable environments to accomplish tasks and assist humans in relevant application domains for society. Several complex problems require the use of teams of cooperative robots that share the same challenges studied in MAS.

MAS are groups of intelligent agents that can perceive and act in a given environment to achieve their individual and collective goals. MAS enable solving problems that are beyond the individual capabilities and knowledge of single agents, not suffering from resource limitations, performance bottlenecks, or critical failures usually found in centralized problem solvers. Multi-robot systems are often used to evaluate and validate MAS with physical robot platforms.

For many years, Robotics and Artificial Intelligence (AI) researchers have worked separately in these fields, both fields have matured enormously, and in recent years there has been a growing interest in getting the two fields together. Many in Robotics believe that the focus in the near future should be adding capabilities to robots that lie at the core of AI research. Reciprocally, AI researchers aim at embedding their techniques in physical robots that can perceive, reason and act in real, dynamic physical environments. Despite this mutual interest, although there are many conferences focusing either on Robotics or AI separately, there is a lack of scientific venues where both communities can meet. The purpose of the IRMAS track is therefore to provide a venue to exploit synergies between Intelligent Robotics and MAS, bringing together researchers from both fields to share experiences, expose issues, and discuss about these exciting fields. Papers that make fundamental contributions in either of these two areas are welcome, and research that spans both areas is especially encouraged. Accepted papers will be included in the ACM SAC 2023 proceedings and published in the ACM digital library, being indexed by Thomson ISI Web of Knowledge and Scopus. Top-quality papers will be invited after the conference for submission, in extended form, to a special issue of a ISI indexed journal.

Topics of Interest

Autonomous robots

Robot localization, mapping and navigation

Multi-agent systems (MAS) theory

Artificial perception and computer vision

Cooperative robots and MAS

Field robotics

Multi-robot systems

Cooperative perception

Coordination and cooperation

Deployment, coverage and patrolling

Decentralized control architectures

Evolutionary robotics and swarm robotics

Human-robot interaction

Social and service robotics

Collaborative robots

Entertainment and educational robots

Real-world applications of MAS

Microrobotics and nanorobotics

Self-adaptation and learning

Robotic dexterous grasping

MAS in mobile ad-hoc sensor networks

Simulation and programming tools for MAS

Important Dates

October 31, 2022 : Paper submission (** deadline extended **)

December 5, 2022 : Author notification

December 13, 2022 : Camera-ready copies

Original papers addressing any of the listed topics of interest (or related topics) will be considered. Each submitted paper will be fully refereed and undergo a blind review process by at least three referees. Paper size is limited to 8 pages. A maximum of 2 additional pages may be included for an additional fee. The reviews will be double-blind: authors' names and affiliations must not appear in the paper, self-citations should be in the third person, and authors must avoid disclosing their identity by any means.

For accepted papers, registration for the conference is required by at least one of the authors or a proxy, who must attend SAC and present the paper. This is a strict requirement for the paper to be included in the ACM SAC 2023 proceedings.

Graduate students are invited to submit research abstracts (maximum 4 pages) to the Student Research Competition (SRC).

Track Website<https://acmsac-irmas2023.isr.uc.pt/>**Track Chair**

Rui P. Rocha

University of Coimbra, Portugal

rprocha@isr.uc.pt