

# 1st DISCOLI Workshop on DIStributed COLlective Intelligence

The **1st DISCOLI workshop on DIStributed COLlective Intelligence** is co-located with the [42nd IEEE International Conference on Distributed Computing Systems \(ICDCS 2022\)](#) that will take place in Bologna, Italy, 10-13 July 2022.

## Call for Papers ([pdf](#)/[txt](#))

Recent technological and scientific trends are promoting a vision where intelligence is more and more distributed and collective. Indeed, as computing and communication technologies are becoming increasingly pervasive, and complexity of systems is growing in terms of scale, heterogeneity, and interaction, hence the focus tends to shift from the intelligence of individual devices or agents to the **collective intelligence (CI)** emerging from a dynamic collection of diverse devices. Such intelligence would allow systems to address complex problems through proper coordination (e.g., cooperation or competition), to self-organise to promote functionality under changing environments, and to improve decision-making capabilities.

The workshop aims to provide a forum where researchers and practitioners can share and discuss fundamental concepts, models, and techniques for studying and implementing collectively intelligent distributed systems. Accordingly, it welcomes original research work providing ideas and technical contributions for promoting scientific discussion and practical adoption of CI mechanisms in engineered systems. As such, the workshop also welcomes cross-disciplinary contributions (e.g., extracting computational mechanisms from natural systems exhibiting forms of CI) and contributions from related research areas like coordination (the study of interaction), multi-agent systems (MAS), socio-technical systems, organisational paradigms, Wireless Sensor and Actuator Networks (WSANs), the Internet of Things (IoT), crowd computing, and swarm robotics.

The topics of interest include (but are not limited to) the following:

- Algorithms for self-adaptive/self-organizing system behaviour
- Algorithms of artificial collective intelligence (e.g., multi-agent reinforcement learning)
- Techniques for task-specific collective intelligence
- Extraction of collective knowledge in Internet of Things systems
- Collaborations of humans and artificial agents in socio-technical systems
- Formal models for computational collective intelligence
- Design and verification of emergent properties in distributed systems
- Coordination models and languages
- Programming languages for distributed CI systems
- Languages for multi-tier programming or macro-programming
- CI for distributed wearable computing systems

- Techniques for crowd computing systems and applications
- Applications of distributed CI for smart environments (e.g., smart cities, smart buildings)
- Tools for programming and simulation of multi-agent systems

## Important Dates

- **Abstract deadline (soft):** February 25, 2022
- **Submission deadline:** March 4, 2022
- Notification: April 7, 2022
- Camera-ready submission: April 21, 2022 (strict)
- **Workshop date:** July 11, 2022 (TBC)

All times are intended in Anywhere on Earth (AoE) timezone.

## Submission, review, participation, and publication details

- **Originality.** Submitted papers must be original, unpublished, and not concurrently submitted for publication elsewhere.
- **Kinds of submissions.** The workshop welcomes two kinds of submissions:
  1. **Workshop papers:** provide original research contributions. These must not exceed **6 pages** (including references; up to two additional pages may be purchased for CR).
  2. **Work-in-Progress (WIP) papers:** describe original work-in-progress research which may not have been fully validated. These must not exceed **4 pages** (including references).
- **Format.** All paper submissions should follow the [formatting indications of the main conference](#), i.e., IEEE 8.5" x 11" Two-Column Format ([IEEE Manuscript Templates for Conference Proceedings](#)).
- **E-submission site:** <https://easychair.org/conferences/?conf=discoli2022>
- **Reviews.** Papers will be peer reviewed for originality, relevance to themes, significance, soundness, presentation, and overall quality. All papers will be reviewed by a TPC with a minimum of 3 reviews per paper. Reviews will be single-blind.
- **Registration and presentation.** At least one of the authors of every accepted paper must register and present the paper at the workshop.
- **Publication.** All *accepted and presented* papers will be submitted to *IEEE Xplore* and indexing databases like Elsevier, IET, and Scopus.
- **Special issue.** A special issue on an ISI-impacted journal will be organised. A set of high-quality papers from DISCOLI will be invited to submit an extended contribution.

## Workshop Chairs

- Roberto Casadei (Alma Mater Studiorum - Università di Bologna, Italy)
- Min Chen (Huazhong University of Science and Technology, China)
- Franco Zambonelli (Università degli Studi di Modena e Reggio Emilia, Italy)
- Mengchu Zhou (New Jersey Institute of Technology, USA)