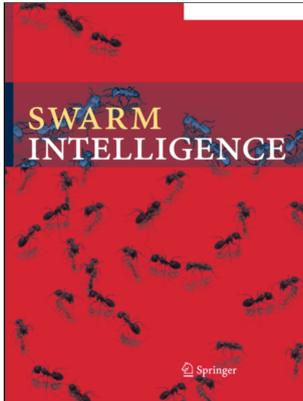


Special issue of the *Swarm Intelligence* journal (Springer)
Collective Decision Making in Living and Artificial Systems

SUBMISSION DEADLINE: OCTOBER 15, 2020



Collective decision making refers to the process whereby a group of individuals process information collectively to reach a common agreement. Reaching agreement is one of the fundamental cognitive processes upon which a collective can realize more complex behaviours. The decisions dynamics and their final outcome are determined by the mechanisms used by individuals to collect, share, and process information. Collective decision making is a widespread phenomenon in natural systems that is studied across taxa and scales, including in humans, group-living animals, and cell populations, and that has inspired the design of algorithms for decentralised artificial systems such as robot swarms and wireless sensor networks.

Examples of collective decisions made by animal groups include choosing a location where to build the nest, a food patch to feed from, or a common direction of motion. Human populations are able to reach an agreement on social norms in the absence of a central coordinating authority or, similarly, to select one commercial product among equally valuable alternatives. Collective decisions are also made by populations of cells, for instance, by collections of neurons interacting with each other to trigger a coordinated response in the brain. While studies of living collectives have inspired and continue to inspire the design of artificial systems, recent technological and theoretical advancements in computer vision, deep learning, and causal inference are providing novel research approaches to researchers in the life sciences.

This special issue solicits high-quality scientific contributions on collective decision making both in natural and artificial systems. We encourage submissions of research contributions that advance our theoretical understanding of the field of collective decision making, report experimental investigations of decision-making mechanisms in living or artificial collectives, propose innovative solutions to the design of decentralised decision-making systems, or provide novel perspectives on natural systems or technological advancements of interest across scientific boundaries.

Contributions to this special issue on collective decision making may fall in any of these research areas:

- Swarm robotics
- Collective animal behaviour
- Voting models
- Cultural evolution
- Network science
- Population dynamics
- Social neuroscience
- Socio- and Econo-physics
- Evolutionary game theory
- Information theory
- Bounded rationality
- Wireless sensor networks

Presubmission enquiry

We recommend the interested authors to submit a presubmission enquiry that should be sent to the Guest Editors (a.reina@sheffield.ac.uk; e.ferrante@vu.nl; gvalentini@asu.edu) prior to submission, ideally by September 15th. A presubmission enquiry must include article title, author list, and abstract (about 200 words). We will assess if the work matches the scope of the special issue and meets the journal's expectations.

Paper Submission

All manuscripts must be prepared according to the publication guidelines of the *Swarm Intelligence* journal that can be found at the journal website: <https://www.springer.com/journal/11721>.

Prospective authors are invited to submit their papers using the online submission system of the journal at

<http://www.editorialmanager.com/swrm>

selecting “*Special Issue on Collective Decision Making*” as the article type.

Guest Editors

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