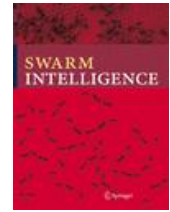


Special Issue of SWARM INTELLIGENCE journal

INTERDISCIPLINARY ASPECTS OF ARTIFICIAL IMMUNE SYSTEMS

Submission Deadline: August 31st 2009



Artificial immune systems (AIS) is a diverse area of research that bridges the disciplines of immunology and engineering. AIS algorithms are typically developed from the abstraction of immune system theories, processes and agents. To date, four main theories have inspired the majority of AIS algorithms: clonal selection, immune networks, negative selection and danger theory. These algorithms have been applied to a wide variety of applications including computer security, fault tolerance, data mining and optimisation to name a few. Recent advances in AIS have seen many other areas of immunology starting to inspire the development of algorithms, with particular emphasis on co-operation, tunability and innate immune systems.

Swarm intelligence (SI) research incorporates many decentralized and distributed systems that exploit the collective behaviour that emerges from the interaction of individual agents with each other and their environment. This definition affords a natural link between SI and AIS: many immune algorithms operate in a very similar manner with populations of immune agents exhibiting similar high-level collective behaviours.

Within AIS there is a growing trend to facilitate the closer interaction between immunology and engineering by the use of various mathematical and computational modelling approaches. These have included dynamical systems analysis, agent-based modelling and cellular automata. The resulting models serve a dual purpose: to improve understanding of the biological domain, and to aid the development of more biologically faithful AIS for engineering problems.

This special issue of the Swarm Intelligence journal aims to bring together state-of-the-art results in the area of AIS, both from the engineering perspective, and the immunology perspective.

The Swarm Intelligence Journal is the principal peer-reviewed publication dedicated to reporting on research and developments in the multidisciplinary field of swarm intelligence. The journal is published quarterly by Springer US.

Selected Topics of Interest

- ✓ Comparative studies of AIS with SI systems
- ✓ Application of AIS to real-world engineering problems
- ✓ Development of novel AIS approaches
- ✓ Theoretical analysis of AIS
- ✓ Mathematical or computational models of immunology
- ✓ Perspectives on the interdisciplinary nature of AIS

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: <http://www.springer.com/computer/artificial/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 "Spec. Issue on Art. Immune Systems" as the article type.

When submitting a paper, please send at the same time also an e-mail to Jon Timmis (jtimmis@cs.york.ac.uk) with paper title and author list to inform about the submission.

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Important Dates

Manuscript due:	August	31, 2009
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Final manuscript due:	January	11, 2010