Preface

Artificial immune systems (AIS) is a diverse and maturing area of research that bridges the disciplines of immunology and engineering. The scope of AIS ranges from immune-inspired algorithms and engineering solutions in software and hardware, to the understanding of immunology through modeling and simulation of immune system concepts. AIS algorithms have been applied to a wide variety of applications, including computer security, fault tolerance, data mining and optimization. In addition, theoretical aspects of artificial and real immune systems have been the subject of mathematical and computational models and simulations.

The 8th International Conference on AIS (ICARIS 2009) built on the success of previous years, providing a forum for a diverse group of AIS researchers to present and discuss their latest results and advances. After two years outside Europe, ICARIS 2009 returned to England, the venue for the first ICARIS back in 2002. This year’s conference was located in the historic city of York, and was held in St. William’s College, the conference venue of York Minster, northern Europe’s largest Gothic cathedral.

Continuing the scope of previous ICARIS conferences, ICARIS 2009 was themed into three diverse areas: immune system modeling, theoretical aspects of AIS, and applied AIS. ICARIS this year saw the addition of published extended abstract submissions for the immune modeling stream, alongside full papers. Extended abstracts underwent the same rigorous review process, being checked for quality and relevance. In addition, we introduced a rebuttal system that allowed authors to respond directly to reviewers’ comments. Based on the rebuttals, we were able to conditionally accept a number of papers that were revised and checked before full acceptance, resulting in an increased quality of these papers. From 55 submissions, we were pleased to accepted 30 high-quality full-length papers and extended immune modeling abstracts for publication, giving us an acceptance rate of 55%.

ICARIS 2009 was delighted to play host to two fascinating keynote speakers. David Harel from the Weizmann Institute of Science, Israel, presented ways in which techniques from computer science and software engineering can be applied beneficially to research in the life sciences, such as T cell development in the thymus and lymph node behavior. Dario Floreano from the School of Engineering at the Swiss Federal Institute of Technology in Lausanne, Switzerland, presented an alternative approach to the design of control systems for micro and unmanned aerial vehicles that are heavily inspired by insect vision and flight control.

To supplement the technical papers and keynotes, three tutorials were presented by Susan Stepney, Thomas Stibor and Tim Hoverd. Stepney demonstrated the usefulness of statistics for AIS algorithms, Stibor described how AIS can benefit from techniques used in the field of machine learning, and
Hoverd gave us an overview of how modeling techniques like the Unified Modeling Language should, and should not, be applied to AIS and related techniques. In addition, ICARIS 2009 played host to a DSTL-sponsored workshop on AIS for anomaly detection in real-time spectra, organized by Mark Neal of Aberystwyth University. The workshop included a competition requiring participants to perform anomaly detection on real-time mass-spectrometry data.

We would like to thank the keynote and tutorial speaks, Program Committee, ICARIS Vice and Publicity Chairs, Mark Neal and finally the authors for their input into creating such a high-quality conference. We would also like to thank Bob French and Mandy Kenyon from the Research Support Office in the Department of Computer Science, University of York, for their invaluable assistance behind the scenes, helping to make ICARIS 2009 a great success.

May 2009

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AISWeb: The on-line home of artificial immune systems
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