

Special session on:



# Swarm Intelligence

*Congress on Evolutionary Computation*, Portland, Oregon (U.S.A.) from 20-23 June 2004.

Swarm Intelligence (SI) is an Artificial Intelligence technique involving the study of collective behaviour in decentralised systems. Such systems are made up by a population of simple agents interacting locally with one other and with their environment. Although there is typically no centralised control dictating the behaviour of the agents, local interactions among the agents often cause a global pattern to emerge. Examples of systems like this can be found in nature, including ant colonies, bird flocking, animal herding, honey bees, bacteria, and many more. Swarm-like algorithms, such as Particle Swarm Optimization (PSO) and Ant Colony Optimization (ACO), have already been applied successfully to solve real-world optimization problems in engineering and telecommunication. SI models have many features in common with Evolutionary Algorithms. Like EA, SI models are population-based. The system is initialised with a population of individuals (i.e., potential solutions). These individuals are then manipulated over many iteration steps by mimicking the social behaviour of insects or animals, in an effort to find the optima in the problem space. Unlike EAs, SI models do not explicitly use evolutionary operators such as crossover and mutation. A potential solution simply 'flies' through the search space by modifying itself according to its past experience and its relationship with other individuals in the population and the environment.



This special session will highlight the latest developments in this rapidly growing research area of Swarm Intelligence. Authors are invited to submit their original and unpublished work in the areas including (but not limited to) the following:

- Particle swarm optimization
- Ant colony optimization
- Artificial life
- Culture algorithms
- Ecologically inspired models
- Other nature-inspired computation techniques
- Multi-objective optimization
- Constrained optimization
- Scheduling
- Real world applications

**Organizers:** Dr. Yuhui Shi, Prof. Russell Eberhart, Xiaohui Hu, Dr Xiaodong Li, and Dr Hussein A. Abbass.

**Technical committee:** James Kennedy (US Department of Labour, USA), Maurice Clerc (France Telecom, France), Russell Eberhart (Indiana University Purdue University Indianapolis, USA), Yuhui Shi (EDS, USA), Xiaohui Hu (Purdue University, USA), Jonathan Fieldsend (University of Exeter, UK), Gerry Dozier (Auburn University, USA), Konstantinos E. Parsopoulos (University of Patras, Greece), Michael N. Vrahatis (University of Patras, Greece), Eleni Laskari (University of Patras, Greece), Hitoshi Iba (University of Tokyo, Japan), Marcus Randall (Bond University, Australia), George Magoulas (Brunel University, UK), Hussein A. Abbass (ADFA, UNSW, Australia), Antony Iorio (RMIT University, Australia), Xiaodong Li (RMIT University, Australia).

## Important dates:

Submission:	<b>January 31, 2004</b>
Notification:	<b>February 15, 2004</b>
Camera-Ready:	<b>March 1, 2004</b>
Conference:	<b>June 20-23, 2004</b>

For more information, please go to the website: <http://goanna.cs.rmit.edu.au/~xiaodong/cec04-swarm/>