2005 IEEE Swarm Intelligence Symposium
Deadline for abstracts extended to January 21, 2005

CALL FOR PAPERS

Scope

Swarm intelligence is an innovative computational and behavioral metaphor for solving distributed problems that originally took its inspiration from the biological examples provided by social insects such as ants, termites, bees, and wasps and by swarming, flocking, herding, and shoaling phenomena in vertebrates. The abilities of such natural systems appear to transcend the abilities of the constituent individual agents.

In most biological cases studied so far, the robust and capable high-level group behavior has been found to be mediated by nothing more than a small set of simple low-level interactions between individuals, and between individuals and the environment.

The problems social insects and swarms of vertebrates solve - for instance, discovering new food sources, dividing labor among nestmates, building sophisticated nests, reliably migrating over thousands of miles, coordinated maneuvering within narrow spaces, and, in general, robustly facing changes in the team composition and external challenges - have important counterparts in engineering and computer science.

While Nature remain a fundamental source of inspiration for researchers in swarm intelligence, new ideas originating form the most different areas in engineering and computer science are emerging and strongly influencing the field. Despite this continuous evolving of the swarm intelligence definition, key principles such as self-organization, distributedness, parallelism, and exploitation of local communication mechanisms among relatively simple individuals are emerging as invariants of this innovative computational and behavioral metaphor.

Paper Submission

The 2005 IEEE Swarm Intelligence Symposium will focus primarily on theoretical foundations of swarm intelligence, models and analysis of collective behavior in natural societies, and design, control, and optimization of collective artificial systems based on principles of swarm intelligence. Papers are solicited for oral or poster presentation in the following areas:

- Multi-objective, constrained, particle swarm optimization, and ant colony optimization.
- Distributed scheduling, data clustering, graph partitioning, decision making, and resource allocation algorithms based on swarm intelligence principles.
- Modeling and analysis of biological collective systems such as social insects colonies,

school and flocking vertebrates, human crowds, ...

- Theory and practice of swarm intelligence in computer and communication networks, robotics, mechanics, business and finance, supply-chain management, transportation systems, ...

In addition to papers, the Technical Program Committee of the symposium solicits hardware/software system demonstrations of ongoing research efforts in swarm intelligence. These will be typically accompanied by a poster as well. Graduate students are especially encouraged to take advantage of this opportunity. If you are interested in showcasing your work, please contact the technical program committee chair.

For questions please contact the general co-chairs at *alcherio.martinoli at epfl.ch* (Alcherio Martinoli) or *p ayman at jpl.nasa.gov* (Payman Arabshahi).

DATES

- **Tutorial proposals:** January 21, 2005
  Tutorial proposals should be submitted to a tutorial co-Chair: James Kennedy kennedy_jim@bls.gov , or Arindam K. Das arindam@ee.washington.edu by the due date. Proposals must include tutorial outline, tutorial length, and credentials.

- **Extended abstract submission:** January 21, 2005
  Please use pdf format.

- **Notification of acceptance:** February 25, 2005
- **Camera-ready papers:** April 8, 2005
- **Early registration:** April 1, 2005
- **SIS'05 in Pasadena, CA:** June 8-10, 2005