

# BIONETICS 2006

BIONETICS  
2006

Technically sponsored by IEEE CIS and IEEE SMC

In co-operation with ACM SIGSIM, ACM SIGEVO and ACM SIGCAS

1<sup>st</sup> International Conference on

## Bio-Inspired Models of Network, Information and Computing Systems

Jointly sponsored by:



11-13 December, 2006, Cavalese (Italy)

[www.bionetics.org](http://www.bionetics.org)

### General Chairs:

Tatsuya Suda, Univ. of California Irvine  
and NTT DoCoMo Inc  
Christian Tschudin, Univ. of Basel

### Vice-Chairs:

Iacopo Carreras, Create-Net  
Lidia Yamamoto, Univ. of Basel

### Steering Committee Chair:

Imrich Chlamtac, Create-Net

### TPC chair:

Masayuki Murata, Osaka Univ.

### TPC vice-chairs:

Andreas Deutsch, Dresden  
Univ. of Technology  
Stephan Steglich, TU Berlin  
Fabio Martinelli, IIT-CNR  
Kenji Leibnitz, Osaka University  
Yuki Moritani, NTT DoCoMo Inc.

### Local Arrangement Chair:

Giuspeppina Alfano, Create-Net

### Publicity Chair:

Falko Dressler, Univ. Erlangen  
Xiuzhen Cheng, George Washington  
Univ.

### Financial Chair:

Karen Decker, ICST

### Panel Chair:

Csaba Kiraly, Univ. of Trento

### Web Chair:

Pedro Santana, Create-net

### Conference Coordinator:

Kitti Kovacs, ICST

## CALL FOR PAPERS

Technology is taking us to a world where myriads of heavily networked devices interact with the physical world in multiple ways, and at multiple scales, from the global Internet scale down to micro and nano-devices. Many of these devices are highly mobile and autonomous, and must adapt to the surrounding environment in a totally unsupervised way.

A fundamental research challenge is the design of robust decentralized computing systems capable of operating under changing environments and noisy input, and yet exhibit the desired behaviour and response time, under constraints such as energy consumption, size, and processing power. These systems should be able to adapt and learn how to react to unforeseen scenarios as well as to display properties comparable to social entities.

Biological systems are able to handle many of these challenges with an elegance and efficiency still far beyond current human artifacts. Based on this observation, bio-inspired approaches have been proposed in the past years as a strategy to handle the complexity of such systems. The goal is to obtain methods on how to engineer technical artifacts which have similar high stability and efficiency as biological entities often have.

The BIONETICS conference aims at bringing together researchers and scientists from several disciplines in computer science and engineering where bio-inspired methods are investigated. We are soliciting high-quality original papers in the following five areas including but not limited to the following topics:

### Bio-inspired mathematical models, methods and tools:

- Mathematical models of biological processes
- Qualitative assessment of evolutionary algorithms
- Multiscale dynamics of emergent properties

### Bio-inspired software:

- Engineering methods and tools for bio-inspired systems
- Bio-inspired service evolution and optimization
- Pandemic service deployment strategies

### Bio-inspired security mechanisms:

- Artificial immune and self-healing systems
- Cell, body, population-level security mechanisms
- Adaptive and evolving protection mechanisms

### Bio-inspired networks and communication systems:

- Bio-inspired network algorithms and protocols
- Bio-inspired autonomic communication systems
- Evolution of network architectures and protocols

### Bio-inspired and bio-based nano-scale communication and information system:

- Molecular communication
- Biological computing
- Nano-scale biologically engineered systems

## Important Dates

**Full paper due: August 7, 2006**

**Notif. of acceptance:** September 18, 2006

**Final version due:** October 16, 2006

## Submission Instructions:

Authors are invited to submit full papers of up to 8 pages, or short papers of up to 1 page, in IEEE conference proceedings format through COCUS (<http://cocus.create-net.it>). The proceedings will be a IEEE Publication and the papers will be listed on the IEEE Xplore and IEEE digital library.