

Welcome from the General Co-chairs

We are very pleased to once again welcome our colleagues to the Fifth International Conference on Hybrid Intelligent Systems (HIS'05) at Rio de Janeiro, Brazil during November 06-09, 2005. The HIS series of conferences attracts a wide range of interests with the development of the next generation of intelligent systems and its various practical applications. A fundamental stimulus to the investigation of hybrid intelligent systems is the awareness in the academic communities that combined approaches will be necessary if the real challenges in artificial intelligence are to be solved. Current research interests in this field focus on integration of the different computing paradigms such as fuzzy logic, neuro-computation, evolutionary computation, probabilistic computing, intelligent agents, machine learning, and other intelligent computing frameworks. The phenomenal growth of hybrid intelligent systems and related topics has created the need for this International conference as a venue to present the latest research. HIS'05 builds on the success of last year's. HIS'04, which was held in Kitakyushu, Japan, 05-08, December 2004, attracted participants from over 26 countries. As evident from the general philosophy of HIS conferences, we have a focus on interdisciplinary approaches and the global strategy to bring together research scientists from the various disciplines related to hybrid intelligent systems. HIS'05, the Fifth International Conference on Hybrid Intelligent Systems addresses the following important themes:

- ❖ Theoretical advances in hybrid intelligent system architectures
 - Interactions between neural networks and fuzzy inference systems
 - Hybrid learning techniques (supervised/unsupervised/reinforcement learning)
 - Artificial neural network optimization using global optimization techniques
 - Fuzzy inference system optimization using global optimization algorithms
 - Hybrid systems involving support vector machines, rough sets, Bayesian networks, probabilistic reasoning, minimum message length
 - Hybrid computing using neural networks - fuzzy systems - evolutionary algorithms
 - Hybrid optimization techniques (evolutionary algorithms, simulated annealing, tabu search)
 - Hybrid of soft computing and statistical learning techniques
 - Integration with Intelligent agents (architectures, environments, adaptation/learning and knowledge management)
 - Hybrid models using inductive logic programming, logic synthesis, grammatical inference, case-based reasoning
- ❖ Hybrid approaches and applications
 - Biomimetic applications
 - Bioinformatics
 - Robotics and automation
 - Web intelligence
 - Image and signal processing
 - Data mining
 - Behavioral simulations
 - Affective computing
 - Control and automation
 - Multi-agent systems
 - Knowledge management
 - Communication and networking
 - Business systems and financial engineering.
 - Power engineering

HIS'05 is technically co-sponsored by IEEE Systems Man and Cybernetics Society, International Fuzzy Systems Association, The World Federation on Soft Computing, European Neural Network Society (ENNS), European Society for Fuzzy Logic and Technology (EUSFLAT), Brazilian Computing Society (SBC), Brazilian Society for Automation (SBA) and is organized in cooperation with the IEEE Computational Intelligence Society.

The HIS'05 program committee represented 22 countries on 5 continents and received over 170 full paper submissions. This certainly attests to the widespread, international importance of the theme of the conference. We would like to thank the HIS'05 international program committee and the additional reviewers for providing the reviews in time. Our special thanks also go to all the plenary speakers for providing the very interesting and informed talks to catalyze subsequent discussions.

Our special thanks to Ms. Jeniferdawn Cantarella of IEEE Computer Society Press for all the support and help related to the production of this important scientific work. Finally, we would like to express our sincere gratitude to all the authors and local organizing committees that have contributed towards the success of this conference. We look forward to seeing you in Rio de Janeiro, Brazil, during HIS'05.

General Co-chairs

Marley M. B. R. Velasco
PUC-Rio, Brazil

Ajith Abraham
Chung-Ang University, Korea

Mario Köppen
Fraunhofer IPK, Germany