Foreword

Efforts to artificially reproduce intelligence have a long and rich history. The interest in hybrid systems probably is as old as the interest in models of intelligence. However the past years have witnessed a consolidation of hybrid intelligent systems as an association of computing methodologies which cooperatively provide a basis for conceptualization and design of intelligent systems.

In many fields, hybrid intelligent systems have achieved a maturity evidenced by key theoretical developments together with successful real world applications. It also indicates that its potential still have to be realized in other aspects. For instance, intelligent systems have been successful in many areas such as modelling, control, optimization, pattern recognition, and forecasting, but semantic processing still is a challenge to most, if not the whole intelligent systems community. A typical example is information storage and retrieval systems, the Internet being the most visible. Current search engines usually do not have enough power to provide meaningful and relevant answers the user expects. Generally, this is also the case in knowledge-based systems and natural language processing in artificial intelligence. Another instance is, if we assume learning as essential for intelligence, then learning should be viewed as a bootstrapping process in the sense that learning and belief revision should be addressed in the framework of what is already known or believed. The current knowledge about the environment should be part of the learning process itself and influence the way in which new observations are used for learning. Such environments are called participatory learning environments. Interestingly, there is a general feeling that, to enhance performance in data and meaning processing, a system should possess, *inter alia*, a language to manipulate granular, imprecise, and dynamic information within the framework in which the system is embedded. Hybridizations of languages and participatory learning schemes may be a step to, in harmony with the current methodological wealth available, feed further attempts to artificially reproduce intelligence.

The International Conference on Hybrid Intelligent Systems is a major forum that brings state of the art information to researchers and practitioners. The topics of neural networks, evolutionary computation, fuzzy systems, learning, search, support vector machines, clustering, classification, swarm intelligence, agents, artificial intelligence, to mention but a few, are among the candidate schemes for hybrid constructs. It is up to creative thinking to decide the degree to which combinations of these methods and other techniques can be applied to a range of problems. As it is always the case, there will remain challenges to generalize hybrid approaches to broad classes of problems, to understand what makes an approach effective, and to develop results to guide analysis and design.

On behalf of the Conference Organization, I would like to extend a warm welcome to participants in the Fifth International Conference on Hybrid Systems - HIS 2005. The Brazilian spirit of friendship and hospitality, especially when mirrored in Rio, will undoubtedly bring motivation and offer a fruitful environment to address the hybrid intelligent systems challenges and needs to foster further advances.

Honorary Chair

Fernando Gomide
Universidade Estadual de Campinas, Brazil