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Welcome to IHMSC 2009!

Dear Colleagues and Friends,

The organizing committee and our local organizers wish to extend to you our personal welcome to attend the 2009 International Conference on Intelligent Human-Machine Systems and Cybernetics (IHMSC'09) which will be held at Hangzhou, China in 26-27, August 2009.

An exciting and comprehensive program highlighting many state-of-the-art scientific and technological advances is planned. The subjects include computational intelligence, knowledge discovery and data mining, intelligent information systems, web mining, synthesis and analysis of complex objects, non-conventional models of computation, structure of regulatory systems, control theory and systems theory. Interdisciplinary research will be given a special emphasis. Sharing research and experiences and openly discussing problems will be strongly encouraged in all scientific sessions.

The 2009 IHMSC program promises exceptional advances in intelligence human-machine systems and cybernetics. We're certain that you will find the city of Hangzhou and the surrounding area to be most pleasant and it will be my distinct pleasure to welcome each of you to the IHMSC in August 2009.

General Chairs of Organization Committees, IHMSC 2009

November 21, 2008

Introduction

Intelligent Human-Machine (IHM) is an offshoot of artificial intelligence. It rather relies on heuristic algorithms such as in fuzzy systems, neural networks and evolutionary computation. In addition, computational intelligence also embraces techniques that use Swarm intelligence, fractals and Chaos theory, Artificial immune systems, Wavelets, etc.

Intelligent Human-Machine Systems combine elements of learning, adaptation, evolution and Fuzzy logic (rough sets) to create programs that are, in some sense, intelligent. Intelligent Human-Machine research does not reject statistical methods, but often gives a complementary view (as is the case with fuzzy systems). Artificial neural network is a branch of computational intelligence that is closely related to machine learning. Intelligent Human-Machine is further closely associated with soft computing, connectionist systems and cybernetics.

Cybernetics is the interdisciplinary study of the structure of regulatory systems. Cybernetics is closely related to control theory and systems theory. Both in its origins and in its evolution in the second-half of the 20th century, cybernetics is equally applicable to physical and social (that is, language-based) systems.

Cybernetics is preeminent when the system under scrutiny is involved in a closed signal loop, where action by the system in an environment causes some change in the environment and that change is manifest to the system via information/feedback that causes changes in the way the system then behaves, and all this in service of a goal or goals. This "circular causal" relationship is necessary and sufficient for a cybernetic perspective. On the one hand a company is approached as a system in an environment. On the other hand cybernetic factory can be modeled as a control system.

Contemporary cybernetics began as an interdisciplinary study connecting the fields of control systems, electrical network theory, mechanical engineering, logic modeling, evolutionary biology, neuroscience, anthropology, and psychology in the 1940s, often attributed to the Macy Conferences.

Other fields of study which have influenced or been influenced by cybernetics include game theory, system theory (a mathematical counterpart to cybernetics), psychology (especially neuropsychology, behavioral psychology, cognitive psychology), philosophy, and architecture.

IHMSC 2009 will be an international forum for researchers and practitioners interested in the advances in and applications of computational intelligence and cybernetics. It is an opportunity to present and observe the latest research, results, and ideas in these areas. IHMSC 2009 aims to strengthen relationships between industry, research laboratories and universities and serve as a forum to present current and future work as well as to exchange research ideas in this field. IHMSC 2009 invites authors to submit their original and unpublished work that demonstrate current research in all areas of computational intelligence and cybernetics, as well as proposals for demonstrations, tutorials, workshops and industrial presentations.