Cognitive and Emotional Information Processing for Human- Machine Interaction

Special Issue of Cognitive Computation

Guest Editors: Stefano Squartini, Amir Hussain, Björn Schuller

Theme and Scope of the Issue

Human-Machine Interaction (HMI) has been widely addressed in the literature and also encountered strong commercial interest in the last two decades: a number of advanced solutions have been proposed in a range of diverse application fields such as User/Web Interfaces, Mobile Computing and Computer Graphics and–from a wider perspective–Robotics, Ambient Intelligence, and Computer Support to Collaborative Work/Learning.

The basic HMI goal is aimed at improving the interactions between users and machines by making machines themselves more usable and receptive to the user's needs. This essentially includes studies on models and theories of interaction, on methodologies and processes for designing interfaces, on developing suitable techniques for evaluating and comparing interfaces and, of course, on exploring new hardware devices and software frameworks.

In particular HMI researchers have been working hard to maximize the naturalness of the interaction itself by reducing the gap between the cognitive and emotional model behind human behavior and the machine awareness of what is going on during the task accomplishment. This asks for development of expert systems, able to manage large amount of information coming from sensory activity, to intelligently process it, and to promptly and knowledgeably respond to human actions according to natural interaction standards and by means of suitable actuary devices. Information processing therefore plays a central role from this perspective, operating at different levels, from multimodal digital data manipulation to semantic meta data processing, and necessarily encompassing the most challenging computational intelligence paradigms for contextual adaptation, social-emotional competence, and cognitive reasoning abilities.

Information scientists working in related areas such as multimedia, machine learning, knowledge management, affective computing or semantic web are invited to contribute to attain the above research aims, by sharing their expertise in this emerging interdisciplinary field, and at the same time paving the way to new exciting HMI research topics.

Topics

Cognitive Systems for Multimodal Interaction

Social and Affective Computing and Applications in HMI

Human Behavior Analysis and Understanding

Multimedia Digital Signal Processing in HMI Systems

Adaptivity, User-, and Interaction Modeling

Unsupervised Interactive Interfaces

Novel Machine Learning Techniques in HMI Systems

Interactive Decision Support Systems

Advanced Natural Language Technologies

Semantic Information Processing

Knowledge Technologies (Acquisition, Discovery, Modeling, and Management)

Language and Emotion Ontologies

Cognitive-Emotional Models in Cooperative Scenarios

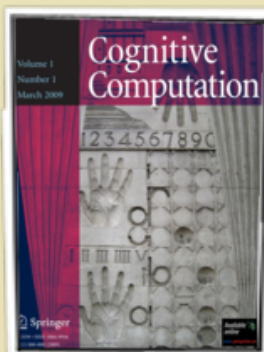Methods and Tools for the Design of Innovative Interactive Systems

Important Dates

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First Notification of Acceptance: 1st November 2011

Final manuscripts due: 1 February 2012

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