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Communicative Intelligence

J.UCS Special Issue

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This special issue consists of several invited papers and the extended versions of selected papers from the invited session "*Communicative Intelligence*" organized in the conference KES 2005 held in Melbourne, Australia, in September 2005.

The aim of session "*Communicative Intelligence*" is to explore the dimensions of intelligent media technologies and intelligent agent systems built on top of Artificial Intelligence, Web Intelligence, Perceptual Information Processing, Human-Computer Interaction, Ontologies, Web Semantics and other intelligent and cognitive technologies that will help people develop individual or collective intelligence by augmenting interaction among them in a significant and profound way. The term "*Communicative Intelligence*" reflects our view that intelligence manifests and develops in communicative activities, data organization and autonomous software. The subject of this session is composed of two main tracks:

- Intelligent Media Technology, and
- Ontology and Agent Systems Design.

Intelligent media technologies attempt to capture and augment people's communicative activities either by embedding computers into the environment so that their interaction can be extended without being interfered by computer operations or by introducing embodied conversational agents that will mediate conversations among people in a social context. We also emphasize that the intelligent support is critical for content production, distribution, and utilization. For the content it is the most important in communication in most applications. In addition to the fundamental issues such as communication models of conversations or evaluation methods, potential applications, such as E-learning or knowledge management, are deemed important as a powerful thrust of research in this field and hence are welcome.

Ontology and Agent System Design are related to agent software which has long been recognized as a promising technology for constructing complex systems as open and distributed communities of loosely-coupled modules. In the field of multi-agent systems the specification of agent communication languages and formalization of ontologies has been a key development. The aim of agent communication languages is to provide standard declarative mechanisms for agents in distributed environments. Ontologies, on the other hand, are intended for conceptualization of the knowledge

domain. In this paradigm agents of heterogeneous nature may possess diverse conceptual views and ontologies. Thus the problem of semantic mismatch arises, and special conflict resolution strategies are necessary to be worked out. The aim of this track is to discuss modern approaches and techniques for ontologies and multi-agent systems, particularly in design aspects and solving conflicts.

These two tracks are supplementary to each other in the sense that the Intelligent Media Technology track sheds light on the interactive aspects of Communicative Intelligence and the Ontology and Agent Systems Design track focuses on the data organization and networking aspects.

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