

Special Issue on Cognitive Infocommunications Theory and Applications – Guest Editorial

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COGNITIVE infocommunications (CogInfoCom) investigates the link between the research areas of infocommunications and cognitive sciences, as well as the various engineering applications which have emerged as the synergic combination of these sciences. The primary goal of CogInfoCom is to provide a systematic view of how cognitive processes can co-evolve with infocommunications devices so that the capabilities of the human brain may not only be extended through these devices, irrespective of geographical distance but may also be blended with the capabilities of any artificially cognitive system. This merging and extension of cognitive capabilities are targeted towards engineering applications in which artificial and/or natural cognitive systems are enabled to work together more effectively. The special issue presents the latest results in this scientific field.

The first paper of this special issue “Interaction Analysis and Cognitive Infocommunications” investigates the technologies of cognitive infocommunications that have been assimilated into the concept of humanity, such as emotion, gesture, and language. The authors outlined implications for research programs conducted within the CogInfoCom discipline.

The second paper is entitled “Unitas Multiplex. Biological Architectures of Consciousness”, and it deals with the consciousness of the organism generated by the encounter of biological and artificial entities (e.g.: humanoid robots, cyborgs). The authors show that several questions emerge from this consciousness. These problems concern: a) the way in which consciousness comes about on the basis of well-defined brain processes; b) how it represents its own organization and not a simple brain function; c) how simultaneously contains multiple distinct contents, each with its own intentionality; d) how it expresses dynamic evolutionary relations and not a set of phenomena that may be isolated; e) finally, how its order is not rigidly hierarchical but is supported by a multiplicity of horizontal levels, each of which is in structural and functional continuum with different phenomenal events.

The third paper of this special issue is entitled “Method to Predict Confidential Words in Japanese Judicial Precedents

Using Neural Networks With Part-of-Speech Tags”. This paper proposes a method for predicting confidential words in Japanese judicial precedent by using part-of-speech (POS) tagging with neural networks.

The fourth paper is “Examination of the Eye-hand Coordination Related to Computer Mouse Movement”, that investigates a general eye-hand coordination task. In the study, an eye-hand tracking system was used to observe the gaze and hand path during mouse cursor movement.

The fifth paper is entitled “Categorization and Geovisualization of Climate Change Strategies Using an Open-access WebGIS Tool”. The authors present the power of collaboration of different types of social geography spatial databases in a web environment. The paper presents the development of the Climate Change Strategies of the world’s countries (CCS), using open-access WebGIS tools and geoinformatics software.

The sixth paper of this special issue is “Multiple Sclerosis Lesion Detection via Machine Learning Algorithm Based on Converting 3D to 2D MRI Images”. This study shows the potential of support vector machines (SVM) in classification of normal and Multiple Sclerosis brain MRI images, to help the diagnosis. This paper also examines the classification of Cellular Learning Automata (CLA), then it expands the research to other methods such as Artificial Neural Networks (ANN) and k-Nearest Neighbor (k-NN) and then compares the results of these.

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He initiated the core theory of the TP model transformation. His key research interests include quasilinear parameter varying, linear matrix inequality, and tensor product model transformation-based control design. Prof. Baranyi is currently a Member of the Hungarian Academy of Engineering.