Special Issue on Cognitive Infocommunications – Guest Editorial

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Humans and the infocommunications network (ICT in the broader sense) surrounding them are merging together at various levels, ranging from low-level connectivity at the cellular and electrotechnical level, all the way to the highest level of sensing collective behaviors such as mass movements, mass habits etc. As a result, humans (more generally, living beings) and infocommunications will soon coexist as an entangled web, resulting in an augmentation of natural cognitive capabilities. This process of merging is occurring today, and is expected to gain further impact in the near future. In analogy, this fact necessitates a merging process between the scientific fields related to natural cognitive systems and the scientific and technological fields related to infocommunications (and ICT).

This special issue presents four papers, which illuminate the need for having interdisciplinary discussions on the merging between cognitive capabilities and infocommunications. The four papers focus on largely distinct application areas, but it should be clear that the point of view that they adopt and the goals that they highlight have several common aspects.

The first paper, entitled "*Cognitive Aspects of a Statistical Language Model for Arabic based on Associative Probabilistic Root-PATtern Relations: A-APRoPAT*" focuses on possibilities to augment the semantic speechability of CogInfoCom systems. The paper examines semantic representations in the highly inflectional Arabic language and proposes a bi-directional probabilistic model to resolve the semantic roots of Arabic text.

The second paper, entitled "*Situation-Awareness in Cognitive Transportation Systems*" focuses on the role of cognitive infocommunications in the implementation and communication of situation awareness, both in the context of robotic transport systems in industrial environments, and in the context of commercial transportation systems. The paper demonstrates well the merging between cognitive capabilities and ICT in a wide range of application areas.

The third paper, entitled "*Understanding User Enjoyment with Geocaching Application*" focuses on the area of pervasive social gaming in general, and Geocaching in particular. The paper discusses the various technical factors that contribute to the enjoyment experienced by players of the Geocaching game, and identifies several important aspects, which, if taken into consideration, can enhance the infocommunication capabilities made possible by pervasive social games, especially in touristic and educational environments.

Finally, the fourth paper, entitled "*The Evolving Nature of Human-Device Communication: Lessons Learned from an Example Use Case Scenario*", focuses on the dynamic properties of biological communication, and how such dynamic properties could be implemented in artificially cognitive infocommunications systems. The paper identifies the layers of cues, signals and channels, and characterizes these various layers of communication in terms of the level of volition and level of directness inherent in them. The paper demonstrates the introduced ideas through a use-case example.

I hope that the variety of papers presented in this special issue can help contribute to the interdisciplinary scientific discussions on CogInfoCom.

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