

Guest Editorial

Recent trends, challenges and applications in cognitive computing for intelligent systems

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Cognitive computing simulates the human thought processes in a computerized model to solve the research problems in an efficient manner. Cognitive computing involves self-learning systems which uses data mining, pattern recognition and natural language processing to replicate the way the human brain work process. The goal of cognitive computing approach is to create intelligent systems that are capable of solving problems without requiring human assistance. The advanced popularity and scope of intelligent systems is obvious, covering not only large-scale applications, but also medium and small-scale practices. Cognitive computing and intelligence envelops basic, tedious undertakings, as well as advanced functionalities for the real-time challenges. As cognitive computing systems become “smarter” and more ubiquitous, it is important that the human interactions with these systems should be safe and efficient.

The research on cognitive computing investigates the development of self-learning systems that naturally interact with humans in complex environments. Cognitive computing systems are capable of adapting the context and changes in target environment.

These systems are proven to be intelligent through better simulation of human mind processes, elaborating huge amounts of data, estimating correlations, testing hypotheses, making predictions and inferences, drawing conclusions, and so on. This is an extremely interdisciplinary emerging research area, at the core of Artificial Intelligence, combining and complementing the scientific results from various disciplines, such as Natural Language Processing, Knowledge Representation and Reasoning, Audio and Video Analysis, Computer-Human Interaction, Neuroscience, and so on.

This Special Issue aims to bring together researchers to publish state-of-art research findings in Cognitive Computing for Intelligent Systems paradigm, focusing on both theoretical and applied techniques. We expect the papers of the special issue to serve as valuable references for a large audience from both academia and industry. After a stringent peer-review process, this special issue features fifty one selected papers with high quality.

This special issue contains papers with interesting technical contribution in hot research topics such as:

- Personalized feedback and intervention for human centred smart systems

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- Adaptive computer vision for human centred systems
- Intelligent interfaces for artificial systems
- Cognitive computing in rehabilitation robot systems
- Cognitive computing in medical healthcare robot
- Cognitive computing in wearable robot systems for personal cooperative assistance
- Hybrid cognitive centred systems
- Augmented cognitive and mechanical systems for human centred systems
- Cognitive computing fundamentals
- Cognitive computing for big data applications
- Cognitive computing and intelligent human-computer interaction
- AI-assisted cognitive computing approaches for smart systems
- Brain analysis for cognitive-inspired computing
- Internet of cognitive Things
- Cognitive environment, sensing and data
- Cognitive robots and agents
- Security issues in cognitive computing
- Intelligent and secure authentication systems
- Context-aware dynamic decision making with cognitive computing
- Decision support systems with cognitive-inspired computing
- Real-world applications and case studies in cognitive computing
- Aggregation of fuzzy preferences
- Missing preferences in the fuzzy decision making
- Social Intelligence and Agent-based Computing
- Intelligent Social Networking
- Applications of the intelligent decision approaches
- Intelligent decision making in complex and dynamic contexts
- Fuzzy preference modeling in intelligent decision support systems
- Intelligent negotiation systems

All the papers included in this special issue were anonymously reviewed by experts to maintain academic excellence and integrity. We wish to thank all, including authors, reviewers, and all the other participants, who have directly and indirectly contributed to the release of this special issue by their engagement.

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