EDITORIAL

Introduction to the Special Issue on "Semantic Sensor Networks"

Sensor technologies are often supporting pervasive and ubiquitous solutions and serve as means of perceiving real world conditions. Problems arise when information that is gathered from various deployed sensors needs to be homogenized, integrated, fused, reasoned upon and queried at. Following an approach based on semantic web technologies by embedding meaning and rendering the information both machine and human consumable is a promising and constantly maturing domain. Semantic web technologies that find numerous applications in sensor networks are of interest in this special issue.

More specifically, this special issue solicited high quality research papers in the following areas of interest: Semantic-based information monitoring, administering and querying, Semantic sensor frameworks and applications, Inference in sensor networks, Semantic data integration in large-scale sensor networks, Semantic data fusion and stream processing, Semantic services architectures, Knowledge management in sensor networks, Scalability in semantic sensor networks, Information flow in sensor networks. Submissions related to any area of semantic sensor networks were welcomed. All of the papers were reviewed by at least two experts in the respective topic area, resulting in the four research articles contained in this special issue. The papers that were accepted for publication address specific problems and span various aspects in dealing with sensor network technologies encompassing semantics.

The first paper in this special issue is entitled "Converting raw sensor data to semantic web triples: a survey of implementation options" and constitutes a state of the art survey and analysis of the alternative options in processing sensory information, from the time a real-world event takes place until the information that describes it and captures its semantics is stored and is available for further exploitation. The second paper, "Sensors tell more than they sense: Modeling and reasoning about sensor observations for understanding weather events" illustrates how sensor observations, with the use of ontologies and reasoning lead to better understanding of weather events. The next paper, entitled "Bridging the semantic sensor web and multimodal human-machine interaction using SCXML", introduces an approach to combine, process and enrich sensor data while further semantically annotating it. Using SCXML, the authors propose extensions able to generate semantic annotations of the obtained knowledge and illustrate a smart-car scenario presenting the main implementation details. The last paper focuses on "Remote supervision of the home environment from mobile terminals". This paper reports on the development of a home monitoring platform that allows complex event processing by collecting measurements and detecting events from the deployed sensors, allowing user communication through mobile phones.

Dr. Konstantinou received his Engineer Degree and Ph.D. from the National Technical University of Athens (NTUA), School of Electrical and Computer Engineering, in 2004 and 2009, respectively. He has participated in a number of nationally and internationally-funded research projects and has worked in various positions in the software development cycle. His research to-date has resulted in more than 15 international, scientific, peer-reviewed journals and conferences. His research interests include knowledge management in digital repositories, context-sensitive systems, and information flow in the internet of things. He is a member of the Technical Chamber of Greece and a member of the IEEE.

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