



International

Innovation in Knowledge Based and Intelligent
Engineering Systems



INVITED SESSION SUMMARY

Title of Session:

Knowledge Management and Intelligent Interaction in Autonomous and Embedded Systems

Name, Title and Affiliation of Chair:

Chair: Radosław Katarzyna, Prof., Wrocław University of Science and Technology, Wrocław, Poland

Co-chair: Janusz Sobecki, Prof., Wrocław University of Science and Technology, Wrocław, Poland

Co-chair: Ziemowit Malecha, Prof., Wrocław University of Science and Technology, Wrocław, Poland

Details of Session (including aim and scope):

Aim of the Session

Knowledge Management and Interaction belong to classic areas of applied computer science. They have been intensively studied for almost three decades, generated a solid theoretical foundation and a broad spectrum of practically oriented models and tools. Recently, however, the traditional approaches to solving knowledge management and interaction tasks have proved to be insufficient. This change has been a consequence from the organizational and functional evolution of today's socio-technical systems, based on new computational paradigms related to the Internet of Things and Big Data. Functional autonomy, computational capabilities, mobility and the embedded character of components of these systems are becoming their new significant features. Moreover, another dimensions that need to be included in up-to-date models of knowledge processing and interaction are, in particular, the heterogeneous nature of data sets processed in socio-technical systems, their huge size, and the need for multi-level coordination of processing and physical autonomy.

It is almost the rule that the situation forces the deep reformulation of the classic tasks of knowledge management and interaction, both at their theoretical and practical levels. For example, solving knowledge management tasks is actually decentralized and the associated computational processes are distributed among collections of cooperating autonomous components. On the other hand, models of interaction with real systems must increasingly take into account their hybrid and complex nature, which makes the interaction more multidimensional and multithreaded to an extent previously unknown. *All this means that the way computing components realize gathering, processing and sharing knowledge in modern systems as well as the way of interacting with these components, all must become increasingly intelligent.*

Detailed Session Topics

This special session collects original papers in which authors present and discuss selected theoretical and practical problems related to the analysis, design, implementation and verification of autonomous and embedded components of today's and future socio-technical systems, with particular emphasis on the components responsible for solving particular knowledge management tasks, as well as theoretical and practical problems related to broadly understood usability and User Experience (UX) study of such components. The list of problems that can be presented and discussed includes, but is not limited to, the following:

- Models of autonomous and semi-autonomous acquisition, collection, processing and sharing of knowledge, taking into account the character of modern social engineering systems with particular emphasis on systems based on the paradigms of Internet of Things and Big Data.
- Modelling, analysis and design of interaction in socio-technical systems with embedded and autonomous computational components.

- Examples of solving particular knowledge management tasks in embedded systems and autonomous systems.
- Examples of implementing intelligent interaction with embedded and autonomous components of modern knowledge-intensive socio-technical systems.
- Examples of usability and UX studies in modern knowledge-intensive socio-technical systems.
- Examples of practical application of autonomous and semi-autonomous sensor networks (e.g. in smart cities, agriculture, security, wide-area monitoring).
etc.

The session organizers cordially invite potential authors to submit papers on the above and related topics.

Important deadlines

- Paper submission: 30 April 2020,
- Notification of acceptance: 15 May 2020
- Final paper publication files to be received by: 29 May 2020

Rules for early registration reduced fees:

<http://kes2020.kesinternational.org/deadlines.php>

Authors who submit and present their work will have their work published and indexed internationally by Elsevier's Procedia Computer Science (<http://www.journals.elsevier.com/procedia-computerscience/>).

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