

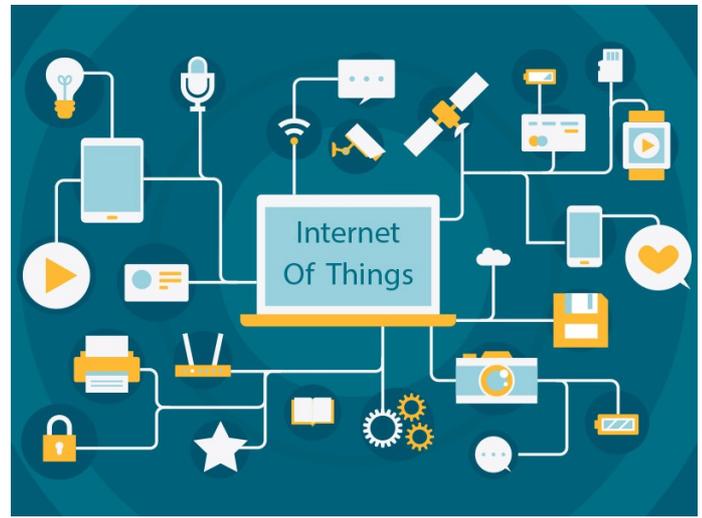
Agents meet the IoT: Towards Ecosystems of Networked Smart Objects

Tuesday 23 January 2018 at 10:00

Aula Mocci

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Speaker: **Dr. Ing. Giancarlo Fortino**
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Abstract:

The future Internet of Things (IoT) will enable a new and wide range of decentralized systems (e.g. from smart homes to smart cities) where “things”, able to sense/actuate, compute and communicate with other machines and with humans, will play a central role. The growing importance of such novel cyberphysical network and technology demands suitable and effective paradigms able to fulfill the general and specific requirements of IoT systems engineering. In this tutorial, we propose the exploitation of the agent-oriented computing paradigm to support IoT systems analysis, design, and implementation. The synergic meeting of Agents with the IoT will make it possible the development of dynamic IoT systems of diverse scales. First, we introduce background and literature about IoT, with a specific focus on IoT systems development along with currently available agent-oriented approaches. Then, we present in detail our agent-oriented approach specifically based on the ACOSO (Agent-based COoperating Smart Objects) Methodology and related middleware, which provides an effective agent programming model and an agent execution heterogeneous platform along with ad-hoc IoT tools for the construction of an IoT system in terms of a Multi-Agent System. A case study concerning the development of a “Smart University” system is described to show the flexibility and effectiveness of the proposed approach. Finally, future challenges will be delineated towards cloud-assisted agent-based approaches for IoT.

*ACOSO project site: <http://acoso.dimes.unical.it>

Biography:



Giancarlo Fortino is currently Associate Professor of Computer Engineering (since 2006) at the Dept. of Informatics, Modeling, Electronics and Systems (DIMES) of the University of Calabria (Unical), Rende (CS), Italy. He has a Ph. D. degree and Laurea (MSc+BSc) degree in Computer Engineering from Unical. He holds the Italian Scientific National Habilitation for Full Professorship and is High-end Foreign Expert of China, Adjunct Professor at the Wuhan University of Technology (China) and Senior Research Fellow at the Italian National Research Council - ICAR Institute. He has been also Visiting Researcher and Professor at the International Computer Science Institute (Berkeley, USA) and at the Queensland University of

Technology (Australia), respectively. His main research interests include agent-based computing, body area networks, wireless sensor networks, pervasive and cloud computing, multimedia networks and Internet of Things technology. He participated to many local, national and international research projects and currently is the vice coordinator and STPM of the EU-funded H2020 INTER-IoT project. He authored over 300 publications in journals, conferences and books. He chaired more than 70 Int'l conferences/workshops as co-chair, organized more than 25 special issues in well-known ISI-impacted Int'l Journals, and participated in the TPC of over 350 conferences. He is the founding editor of the Springer Book Series on “Internet of Things: Technology, Communications and Computing”, and currently serves (as associate editor) in the editorial board of IEEE Transactions on Affective Computing, IEEE Transactions on Human-Machine Systems, IEEE Sensors Journal, IEEE Access, Journal of Networks and Computer Applications, Engineering Applications of Artificial Intelligence, Information Fusion. He is the recipient of the 2014 Andrew P. Sage SMC Transactions Paper award. He is co-founder and CEO of SenSysCal S.r.l., a spin-off of Unical, developing innovative IoT-based systems for e-health and domotics. He is IEEE Senior member, the Chair of the IEEE SMC Italian Chapter, and founding chair of the IEEE SMC Technical Committee on “Interactive and Wearable Computing and Devices”.