学术报告会

时间：2014年11月28日(周五)10:00-12:00

地点：电院群楼2-410会议室

Distributed Intelligent Systems and Industrial Automation

Prof. Valeriy Vyatkin

Luleå Tekniska Universitet, Sweden & Aalto University, Finland

Abstract:

In this talk we will discuss "facts and fallacies" behind the development of distributed systems in the industrial automation context. What are the drivers behind such modern buzzwords as Agents, Cyber-Physical Systems and Service-Oriented Architectures and how are they really relevant to automation systems? What are the designer choices when it comes to the development of software? To which extent the distribution is related to modularization? There has been massive research effort towards making industrial automation more intelligent. Examples include multi-agent systems with reasoning capabilities and driven by semantic knowledge, self-organizing systems in such areas as manufacturing, energy and transportation. However, penetration of these results to industrial world is not great. Practitioners oppose that all technical systems need to implement concrete requirements respecting various constraints, and it is hard to ensure those with "intelligent" automation. Another obstacle is the lack of engineering methods to convert requirements to the intelligent automation solutions. All these trends are observed in many industrial sectors, such as manufacturing, material handling, as well as power systems automation and SmartGrid.

Biography:

Valeriy Vyatkin is on joint appointment as Chaired Professor of Dependable Computations and Communications at Luleå Tekniska Universitet in Luleå Sweden, and professor of Information and Computer Engineering in Automation at Aalto University, Finland. Previously he worked as Professor and the director of Industrial Informatics research lab at the Department of Electrical and Computer Engineering, University of Auckland, New Zealand. Research interests of Prof Valeriy Vyatkin are in the area of dependable distributed automation and industrial informatics, including software engineering for industrial informatics systems, distributed architectures and multi-agent systems applied in various industry sectors: SmartGrid, logistics and transportation, material handling, building management systems, reconfigurable manufacturing, etc. Prof Vyatkin is also active in research on dependability provisions for industrial control systems, such as methods of formal verification and validation, and theoretical algorithms for improving their performance. Prof Vyatkin and his group are involved in joint research projects with companies in the U.S., Canada, Austria, New Zealand and Germany. He has been a Principal Investigator of research projects in the FREEDM program, funded by the National Science Foundation. He is New Zealand delegate to the standardization committees of the International Electrotechnical Commission (IEC) on standards 61131 and 61499.