IEEE Latvia Section

in association with Riga Technical University presents

Date:
June 7 2016

Time:
13:00-15:00

Location:
Kalku Str. 1-201,
RTU main building

Registration:
Free

Topic:
Embedded Systems as Foundations of Cyber-Physical Systems

Speaker:
senior researcher
Bernadetta Kwintiana Ane
IEEE distinguished visitor

Distinguished Visitors Program

with

senior researcher **Bernadetta Kwintiana Ane**

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"Embedded Systems as Foundations of Cyber-Physical Systems"

Robots, intelligent buildings, implantable medical devices, cars that drive themselves or planes that automatically fly in a controlled airspace are examples of Cyber-Physical Systems (CPS). Today, CPS can be found in such diverse industries as aerospace, automotive, energy, healthcare, manufacturing, infrastructure, consumer electronics, and communications. Everyday life is becoming increasingly dependent on these systems, in some cases with dramatic improvements. CPS can be described as smart systems that encompass computational (i.e., hardware and software) and physical components, seamlessly integrated and closely interacting to sense the changing state of the real world. These systems involve a high degree of complexity at numerous spatial and temporal scales and highly networked communications integrating computational and physical components. In fact, CPS is about the intersection, not the union, of the physical and the cyber. In CPS, embedded computers and networks monitor and control the physical processes, usually with feedback loops where physical processes affect computations and vice versa. The design of such systems requires understanding the joint dynamics of computers, software, networks, and physical processes. Therefore, it is not sufficient to separately understand the physical components and the computational components. We must instead understand their interaction.

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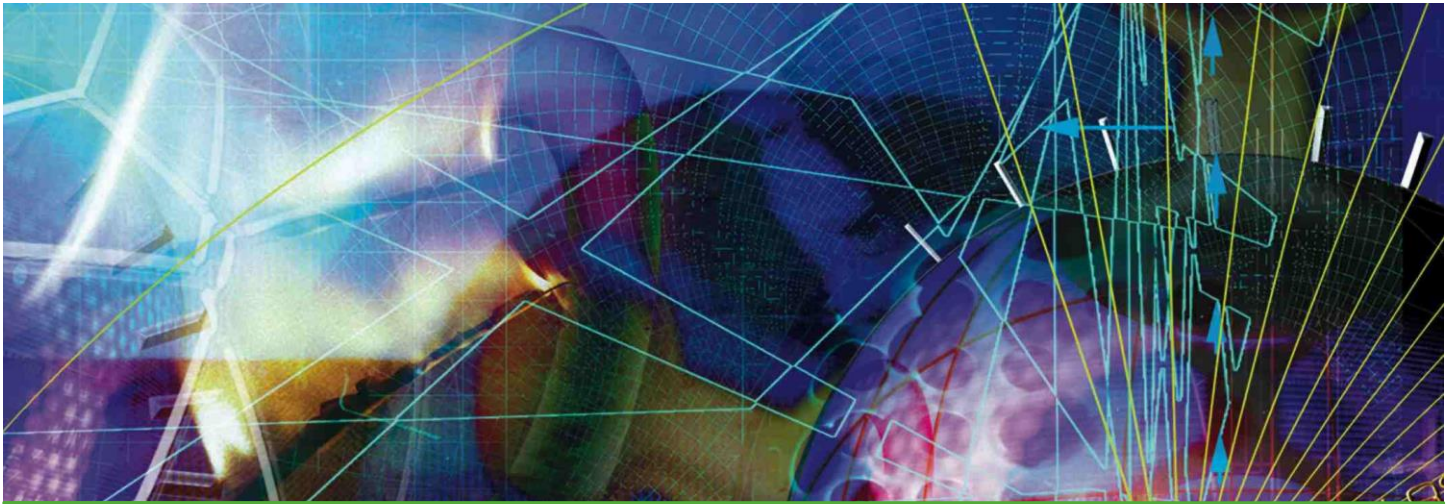
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Bernadetta Kwintiana Ane is a Senior Researcher at the Institute of Computer-aided Product Development Systems, University of Stuttgart in Germany. She has 12 years teaching experiences mainly in Engineering Graphics and Design, particularly for application in the fields of Mechanical Engineering and Computer Science. Her research interest includes computer aided geometric design (CAGD), reverse engineering, computer-aided design/manufacturing/engineering (CAD/CAM/CAE), product design, design visualization, design automation, computer supported collaborative design, virtual reality based product design, cyber-physical design systems, and not limited to scientific data rendering and visualization for application in bioinformatics and in-silico modelling. She has won various international research grants and has published more than 65 scientific writings in the form of books, chapters in books, journal papers, and conference papers. She is a fellow of Monbukagakusho, Japan as well as the Alexander von Humboldt Foundation and German Academic Exchange Service (DAAD), Germany. Since 2007, she played active roles as lead researcher in the international research projects in Germany as well as member in other European countries' projects. Currently, as a Humboldtian and IEEE professional member she serves internationally as research fellow for several European research centres. She also serves as an associate editor for the Journal of Intelligent Automation and Soft-Computing (Taylor & Francis) and Journal of Applied Soft Computing (Elsevier Science), as well as grant assessor for The Czech Academy of Science, The Czech Science Foundation, and an independent expert to assist the European Commission with tasks in connection with the Framework Programme (Horizon2020) for Research and Innovation.

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