

# INDUSTRIAL SPEAKER SERIES

## Center for Embedded Computer Systems

*Presents*

### **Application Specific Multicore Chips for Medical Services**

Dr. Iyad Al Khatib, Solidux Telecom AB  
Stockholm, Sweden

#### ***Abstract***

The last two decades have witnessed the birth of revolutionary technologies in data communications including wireless technologies, System on Chip (SoC), Multi Processor SoC (MPSoC), Network on Chip (NoC), and more. At the same time we have witnessed that performance does not always keep pace with expectations in many services like multimedia services and biomedical applications. In the medical field, from a statistical viewpoint, the biggest diseases in number of deaths are heart diseases, namely Cardiovascular Disease (CVD) and Stroke. The application with the largest market for CVD is the electrocardiogram (ECG/EKG) analysis. These projects have a medical impact as well as economic and social impacts. The intention is to use performance analysis of interconnected microelectronic systems and combine it with MPSoC technologies in order to evolve to new systems on chip that may make a difference. Technically, we aim at rendering more computations in less time, on a chip with smaller volume, and with less expense. We explore the design space by analyzing different hardware and software architectures. Consequently, we present three interconnect architectures (Single Bus, Full Crossbar, and Partial Crossbar) and compare them with existing solutions. The critical input and design points are discussed. We also show how our performance analysis methods can be applied to such a field of SoC design and with a specific purpose application in order to converge to a solution that is acceptable from a performance viewpoint, meets the real-time demands, and can be implemented with the present technologies.

#### ***Biography***

Dr. Iyad Al Khatib is the Chief Technology Officer of Solidux Telecom AB, a Telephony company, headquartered in Stockholm, Sweden. Iyad is also the R&D adviser at Sting Networks AB, a company that delivers Telephony and data technology services to Healthcare and medical centers in Sweden. Iyad is also the General Adviser for business development in the EMEA and North American regions for the British company Unified Networks Ltd., whose core business is in infrastructure networks. He was the CEO and Founder of iITC, a Swedish IT company for innovation in IT and Biomedical Engineering, headquartered in Stockholm, Sweden.

Iyad received his Ph.D. in Multicore Systems for Medical Applications from the Royal Institute of Technology (KTH), Stockholm, Sweden. He has a Licentiate of Technology (a Swedish degree between the Master and Ph.D. degrees) in Networking and Wireless Communications from KTH. He received his Master of Engineering (M.E.) from the American University of Beirut (AUB) majoring in Biomedical Engineering within the field of Computer and Communications Engineering (CCE). He received his Bachelor of Engineering (B.E.) in CCE from the AUB also. Currently, Iyad is working on building a worldwide consortium for ICT in Healthcare, food (and water) safety, and environment.

**Friday, July 24, 2009**

Engineering III Room 2430

Lecture begins at 11:00am; Refreshments at 10:30am

CECS Host: Fadi Kurdahi

For more information contact: Melanie Kilian at (949) 824-9127

UNIVERSITY OF CALIFORNIA, IRVINE

# INDUSTRIAL SPEAKER SERIES

Center for Embedded Computer Systems