



Emerging trends and innovation in Technology

HURRY UP

Limited Seats Available

TUTORIAL 1 Title: Techniques for 2-D and 3-D Network-on-Chip (NoC) Design, Synthesis and Reconfiguration

Soumya J. (Research Scholar)
Prasad N. (Research Scholar)
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Summary: System-on-Chip (SoC) is a paradigm for designing today's integrated circuit (IC) chips that puts an entire system onto a single silicon floor (instead of printed circuit boards containing a number of chips accomplishing the system task). With the increasing number of cores integrated on such a chip, on-chip communication efficiency has become one of the key factors in determining the overall system performance and cost. The communication medium used in most of the modern Systems-on-Chip (SoCs) is shared global bus. In bus based Systems-on-Chip (SoC), due to many on-chip communication challenges, the performance, speed, and power consumption of a system can be affected severely. Network-on-Chip (NoC) is an emerging alternative that overcomes this bottleneck for integrating large number of cores on a single SoC. NoC is a specific flavor of interconnection networks where the cores communicate with each other using a router based packet switched network. Interconnection networks have been studied for more than last two decades and a solid foundation of design techniques has been reported in the literature. Thus, NoC is today becoming an emerging research and development topic including hardware communication infrastructure design, software and operating system services, CAD tools for NoC synthesis, reconfigurable design and so on. In designing NoC systems, there are several issues to be concerned with, such as topologies, routing algorithms, performance, latency, power consumption, complexity and so on. None of these factors can be independent in deciding the NoC architecture.

This tutorial aims at covering the important aspects of NoC design – communication infrastructure design, communication methodology, evaluation framework, mapping of applications onto NoC, topology synthesis etc. Apart from these, it also proposes to focus on other upcoming NoC issues, such as, reconfiguration, 3-D NoC design, and thermal aware NoC design.

TUTORIAL 2 Title: Reliable Real Time Embedded Systems

Dr. Arijit Mondal (Asst. Professor) IIT Patna
Dr. Arnab Sarkar & Dr. Santosh Biswas (Associate. Professor) IIT Guwahati

Summary: Real-time embedded applications span a wide range of mission critical domains like automotive and flight control, nuclear plant monitoring, robotics, medical instrumentation, etc. In addition to satisfying timing constraints, these systems must ensure functional correctness in the presence of permanent and transient faults. Further, due to the amount of embedded software and complex hardware that is involved in real time embedded systems, it is not possible to guarantee error operations under all possible input cases. In the proposed tutorial we would focus on issues and solutions that are involved in development of Reliable Time Embedded Systems.

TUTORIAL 3 Title: Emerging Trends in Robotic Development in India

Mr. Alok Mukherjee, Head Robotics, R & D Engrs, DRDO, Pune
 Team from KPIT cummins, BARC and Hitech Robotic Systems

Summary: Development in the area of Robotics has gained impetus in the past decade nationally. The development has mainly been fuelled by the need of robots for hazardous material handling, surveillance and reconnaissance. Handling of hazardous materials is mainly required in the area of Atomic Energy and Defence thereby giving a boost to technology development and innovation to solve complex and dangerous tasks. The requirements of robots can be classified in the two categories viz. Static Multi-axis or Parallel Manipulators and Mobile Robots. The requirements of Atomic Energy would mainly fall into complex material handling tasks to be carried out indoors by static robots, whereas in Defence applications the environment is normally outdoors with challenges related to mobility and survivability.

Robotic systems development being inherently multi-disciplinary, pose additional challenges to the developers regarding interfaces, inter-operability and scalability. The systems designers need to synergize the efforts of different teams working in unison in order to realize a product for deployment. In addition, issues related to reliability, maintainability and life cycle support call for a well-planned approach and efforts aligned to standardizations. Development in this area is being carried out with close collaboration between the Research Laboratories, Academia and Industry. The amalgamation of these efforts is leading to robotic solutions to meet the challenging requirements. Speakers from DRDO, BARC, IITs and Industry shall be addressing the delegates to provide an insight into the developed robots and the projects ongoing.

TUTORIAL 4 Title: Smart Grid: Secure and Sustainable Energy for all forever

Dr. Vidyasagar Potdar
 Curtin University, Australia

Summary: Electricity costs are predicted to skyrocket in the coming years and it's expected to double over the next 5 years due to challenges in resources development and climate change, and this is a worldwide issue. Smart Grid achieves bidirectional energy and information flow between the energy user and the utility grid, allowing energy users to generate energy and share with the utility grid or with other energy consumers. "Prosumer" is the energy user who consumes as well as generates energy and they form a "Prosumer Community Smart Grid". The key objective of a prosumer community smart grid is to be self-sufficient and sustainable and to share the excess energy amongst the community first and then auction the rest to the utility grid.

TUTORIAL 5 Title: An Overview of High Performance Computing, Grid & Cloud Computing

Dr. VCV Rao,
Dr. Subrata Chattopadhyay,
Dr. B. B. Prahlada Rao
 C-DAC, Pune

Summary: One of the objectives of tutorial is to discuss current trends on High Performance Computing (HPC), Grid and Cloud Computing technologies from application, algorithm and architecture point of view. An overview of current multi-to-many core processor programming paradigms in distributed computing infrastructure (Grids & Cloud) will be discussed.

TUTORIAL 6 Title: Introduction of Mathematical Modeling

Dr. Samir Kumar Das
 Professor and Head, Department of Applied Mathematics Defence Institute of advanced Technology (DIAT), Pune

Summary: This tutorial focuses on the definition of mathematical modeling, motivation for its use in engineering and science and set the principle approach in developing mathematical model. The Physical relation between Physical system and mathematical system is described through engineering applications from different disciplines

Registration Details

Indian Delegates (INR)				
Category	PROFESSIONALS		STUDENTS	
	IEEE	Non - IEEE	IEEE	Non - IEEE
Tutorial	<input type="checkbox"/> 1200	<input type="checkbox"/> 1700	<input type="checkbox"/> 1200	<input type="checkbox"/> 1400
International Delegates (US \$)				
Tutorial	<input type="checkbox"/> 25	<input type="checkbox"/> 50	<input type="checkbox"/> 20	<input type="checkbox"/> 20

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