

Modelling and Analysis of Cyber Physical Systems

Overview

Cyber physical systems are the next generation embedded systems in which networked control systems tightly interact with physical systems. The application areas include automotive, aerospace, transportation, multi-robotic systems, home automation, hospital automation and healthcare. Many of these systems are software intensive and safety-critical in nature and requires systematic and rigorous development methodology. The emphasis of the course is on rigorous modelling and analysis of cyber-physical systems. The traditional model based development methodology would be extended to cyber-physical systems with a focus on system engineering aspects like systems modelling, simulation, and system decomposition. Various modelling abstractions and tools useful for modelling cyber-physical systems would be introduced in this course. These include: Esterel, SCADE, SysML, Ptolemy II and Event-B. Throughout the course, case studies and cases from automotive, railway systems and Smart Grids will be used. It is also planned to have short projects involving modelling and simulation of different application areas.

Modules	A: Modelling of CPS : 8-9 and 11-13 July B: Analysis and verification of CPS, case studies :14-16 and 18-20 July Number of participants for the course will be limited to fifty. Last date of Registration: 25th June 2016
You Should Attend If...	<ul style="list-style-type: none">▪ you are a Computer Scientist, an Electronics engineer or a researcher in these areas interested in the design/analysis of Cyber Physical Systems.▪ you are a student or faculty from academic institution interested in Cyber Physical Systems
Fees	The participation fees for taking the course is as follows: Participants from abroad : US \$500 Industry/ Research Organizations: Rs. 20000 Academic Institutions: Rs. 10000 The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with accommodation on payment basis.

The Faculty

Prof. S. Ramesh is currently a senior technical fellow at General Motors Global R&D, USA, and is an adjunct faculty at IIIT Bangalore. At GM, he is responsible for providing technical leadership for research and development in several areas related to Electronics, Control & Software processes, methods, and tools. His areas of interests are Rigorous Software Engineering, Embedded Systems and Real-Time Systems. He is a fellow of the Indian National Academy of Engineering.



Prof. Michael Butler is a Professor of Computer Science at Southampton where he leads the ESS Group. He is internationally recognized as a leading expert in refinement-based formal methods. His research work encompasses applications, tools and methodology for formal methods, especially refinement based method such as B and Event-B.



Dr. Manoranjan Satpathy is an Associate Professor of Computer Science at Indian Institute of Technology, Bhubaneswar. His research interests are Formal Modelling, and Testing/ verification of software systems.



Dr. Swarup Mohalik is a Principal Engineer in Ericsson Research, Bangalore. He has over 16+ years of experience in industrial research. He has a PhD in Computer science from the Institute of Mathematical Sciences, Chennai. Earlier, he has also worked at Intel, General Motors and Hewlett-Packard. His expertise is in the theory of automata, logic and formal methods.

Venue:

School of Electrical Sciences IIT
Bhubaneswar, Samantapuri,
Bhubaneswar – 751013, Odisha

Course Coordinator

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Register for the course at:
<http://www.gian.iitkgp.ac.in/GREGN>

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