

DEPENDABLE EMBEDDED SYSTEMS SPECIAL DAY

PANEL: Issues and Challenges in Dependable Embedded Systems

Organizers

- Neeraj Suri, TU Darmstadt, Germany
- Christof Fetzer, TU Dresden, Germany

Panelists

- Jacob Abraham, Univ. of Texas at Austin, USA
- Stefan Poledna, TTTech, Austria
- Avi Mendelson, Intel, Israel
- Subhasish Mitra, Stanford Univ, USA

Embedded Systems are pervasively appearing in virtually all walks of life - communication, computing, e-/m-commerce, leisure, medical, WSN, transportation, biometrics. The utility of these embedded systems and services is based, in large part, in our depending on their sustained functionality in spite of the encountered operational or malicious disruptions. As the number of transient and also permanent disruptions (given the decreasing device geometries, higher device density, lower voltage latching, faster clocks etc) is expected to increase substantially, this will not only be a key issue for the hardware community but also the systems community in general. Solutions using a combination of hardware and software might be more effective than hardware-only or software-only solutions.

Building upon the discussions on the conceptual and applied issues for design, analysis and validation of dependable embedded systems, the panel will bring together both the academic and industrial perspectives on the upcoming challenge themes. Specifically the coverage will encompass the spectrum of device level, communication aspects and system level aspects tackling both synergistic and across the board needs for the future dependable embedded "systems".

Panelists:

Prof. Jacob Abraham

Jacob A. Abraham is a Professor in the Department of Electrical and Computer Engineering at the University of Texas at Austin. He is also director of the Computer Engineering Research Center and holds a Cockrell Family Regents

Chair in Engineering. He received the Bachelor's degree in Electrical Engineering from the University of Kerala, India, in 1970. His M.S. degree, in Electrical Engineering, and Ph.D., in Electrical Engineering and Computer Science, were received from Stanford University, Stanford, California, in 1971 and 1974, respectively. From 1975 to 1988 he was on the faculty of the University of Illinois, Urbana, Illinois.

Professor Abraham's research interests include VLSI design and test, formal verification, and fault-tolerant computing. He is the principal investigator of several contracts and grants in these areas, and a consultant to industry and government on testing and fault-tolerant computing. He has over 300 publications, and has been included in a list of the most cited researchers in the world. He has supervised more than 60 Ph.D. dissertations. He is particularly proud of the accomplishments of his students, many of whom occupy senior positions in academia and industry. He has served as associate editor of several IEEE Transactions, and as chair of the IEEE Computer Society Technical Committee on Fault-Tolerant Computing. He has been elected Fellow of the IEEE as well as Fellow of the ACM, and is the recipient of the 2005 IEEE Emanuel R. Piore Award.

Dr. Stefan Poledna

Stefan Poledna has 20 years of experience in the automotive industry and know-how in the area of controller unit development. He is a founding member of TTTech and is responsible for R&D and services. Stefan Poledna also lectures on fault-tolerant computer systems at the Vienna University of Technology.

Dr. Avi Mendelson

Avi Mendelson is a principal engineer in Intel's Mobile Platform Group in Haifa, Israel, and adjunct professor in the CS and EE departments, Technion - Israel Institute of Technology. He received his B.Sc. and M.S.c degrees from the Technion, Israel Institute of Technology and his Ph.D from the University of Massachusetts at Amherst. Avi has been with Intel for 7 years. He started as senior researcher in Intel Labs, later he moved to the Microprocessor group where he served as the CMP architect of Intel Core Duo. Avi's work and research interests are in computer architec-

ture, low power design, parallel systems, OS related issues and virtualization.

Prof. Subhasish Mitra

Subhasish Mitra is a faculty member in the Departments of Electrical Engineering and Computer Science of Stanford University where he leads the Stanford Robust Systems Group. His research interests include robust system design, VLSI design and test, computer architecture and design for emerging nanotechnologies. Prior to joining Stanford, Prof. Mitra was a Principal Engineer at Intel Corporation where he invented enabling technologies for robust system design - Design for Excellence - that have been deployed in several products. He received Ph.D. in Electrical Engineering from Stanford University.

Prof. Mitra has co-authored more than 90 technical papers and several patents, and has invented design and test techniques that have seen wide-spread proliferation in the chip design industry. His X-Compact technique for test compression is used by 40+ major Intel products including microprocessors, chipsets, and communications chips, and is supported by major CAD tools. His recent work on imperfection-immune circuit design using carbon nanotubes, jointly with his students and collaborators, has been highlighted in the MIT Technology Review, EE Times, and several other publications. Prof. Mitra's major honors include the National Science Foundation CAREER Award, Terman Fellowship, IEEE Circuits and Systems Society Donald O. Pederson Award for the best paper published in the IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, a Divisional Recognition Award from Intel "for a Breakthrough Soft Error Protection Technology," a Best Paper Award at the Intel Design and Test Technology Conference for his work on Built-In Soft Error Resilience, and the Intel Achievement Award, Intel's highest corporate honor, "for the development and deployment of a breakthrough test compression technology that improved scan test cost by an order of magnitude."

Prof. Mitra has held several consulting positions, and served on committees of several IEEE and ACM conferences and workshops as co-founder, general and program chair, and organizing and program committee member.