TUTORIAL I

Distributed Real-Time Systems: Issues, Solutions, and Applications

SPEAKER: Kang G. Shin, Univ. of Michigan, USA

SCOPE AND OUTLINE:

This tutorial is intended to cover issues, solutions and applications of distributed real-time computing (RTC) centered around timeliness and dependability Quality of Service (QoS). It will begin with the basic concepts of RTC, review the nature of distributed real-time applications, discuss issues and solutions in mapping applications and managing resources in a distributed environment to provide the application required QoS. Specifically, it will cover:

- Characterization of distributed real-time computing systems.
- Task assignment and scheduling to meet deadlines.
- Real-time OS and architectures: requirements, principles, and examples.
- Real-time communications: protocols and end-to-end delay guarantees.
- Real-time software: programming languages and their environments, applications software, and tools for monitoring and debugging.
- Real-time databases and their applications.

ABOUT THE SPEAKER:

Kang G. Shin is professor and Director of the Real-Time Computing Laboratory, Department of Electrical Engineering and Computer Science at the University of Michigan, Ann Arbor, Michigan. He has authored/co-authored over 300 technical papers (more than 130 of these in archival journals). Area of current research is distributed real-time and middleware services, computer architecture, performance and reliability evaluation, real-time database, embedded applications such as robotics and manufacturing and process control and monitoring, and intelligent transportation systems. He has been awarded IEEE Computer Society's Meritorious Service Award in 1994 and 1997, Research Excellence Award from the University of Michigan in 1989, Outstanding Paper Award from the IEEE Trans. on Automatic Control in 1987 and so on. He is an IEEE fellow.