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and
Department of Systems Design Engineering Present:

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The University of New Mexico, Albuquerque

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**Control of Large-Scale Complex Systems – From Hierarchical
to Autonomous**

ABSTRACT

A system is sometimes considered to be large scale if it can be partitioned or decoupled into a number of subsystems, that is, small-scale systems. Another viewpoint is that a system is termed large scale if its dimensions are so great that conventional techniques of modeling, analysis, control, design, optimization, estimation, and computation fail to give reasonable solutions with reasonable efforts. A third definition is based on the notion of centrality. Until the advent of large-scale systems, almost all control systems analysis and design procedures were limited to having system components and information flow from one point to another localized or centralized in one geographical location or center, such as a laboratory. Thus, another definition is a system in which the concept of centrality fails. This can be due to a lack either of centralized computing capability or of a centralized information structure. Large-scale systems appear in such diversified fields as sociology, business, management, the economy, the environment, energy, data networks, computer networks, power systems, flexible space structures, internet-based systems, transportation, aerospace, and navigational systems.

See Biography Attached

Dr. Mo Jamshidi (Fellow IEEE, Fellow ASME, Fellow AAAS, Fellow TWAS) is the Regents Professor of Electrical and Computer Engineering, the AT&T Professor of Manufacturing Engineering and founding Director of Center for Autonomous Control Engineering (ACE) at the University of New Mexico, Albuquerque, NM, USA. He is a Senior Research Advisor at US Air Force Research Laboratory, KAFB, NM. He is an advisor to US DOE on robotic automation for 9 industries of the future in USA. He is also an advisor for the NASA Headquarters. He has worked over 4 years in industry at IBM Corporation and General Motors Corporation (USA) and Siemens Automotive, France. He has over 500 technical publications including 50 books and edited volumes. Six of his books have been translated into at least one foreign language. He is the Founding Editor or co-founding editor or Editor-in-Chief of 5 journals (including Elsevier's *International Journal of Computers and Electrical Engineering* Elsevier, UK, *Intelligent Automation and Soft Computing*, TSI Press, USA) and one magazine (*IEEE Control Systems Magazine*). He was the series editor for ASME Press Series on Robotics and Manufacturing from 1988 to 1996 and Prentice Hall Series on Environmental and Intelligent Manufacturing Systems from 1991 to 1998.