APARM Special Session II

Special Session Basic Information:

Session Title	Modeling and Applications for Stochastic and Data-driven Systems

Introduction and topics

   In complex systems, operational uncertainty and stochastic behavior necessitate rigorous stochastic modeling for reliability analysis and maintenance decision-making. This special session aims to highlight models for stochastic systems and data-driven applications, including (but not limited to) repairable systems, network reliability, optimal replacement policies, and optimal preventive-maintenance strategies. Particular emphasis is placed on the development of stochastic processes, reliability theory, and maintenance optimization frameworks. Data analysis and machine learning techniques are considered as complementary tools for parameter estimation and decision support, rather than as primary drivers of modeling formulation. Contributions may include the formulation of theoretical models, methodological comparisons, comparative numerical computations and simulation studies, or applications in manufacturing, infrastructure, and communication systems. Through proper analytical modeling and systematic evaluation, this special session aims to advance the theoretical understanding of reliability and maintenance strategies in complex systems, providing a solid foundation for engineering and management decision-making.

Special Session Chair(s):

Name	Dong-Yuh Yang
Prefix	Professor
Department	Institute of Information and Decision Sciences
Organization	National Taipei University of Business
City/Region	Taiwan

Organizer's Brief Biography

   Dong-Yuh Yang is a Professor at Institute of Information and Decision Sciences, National Taipei University of Business, Taiwan. He received his Ph.D. in Industrial Engineering and Management from National Chiao Tung University, Taiwan. His research interests include reliability, queueing theory, applied statistics, and stochastic models. He has published more than 50 research papers in Applied Mathematical Modelling, Computers and Operations Research, Computers and Industrial Engineering, Reliability Engineering and System Safety, and other journals.

Name	Chia-Huang Wu
Prefix	Associate Professor
Department	Industrial Engineering and Management
Organization	National Yang Ming Chiao Tung University
City/Region	Taiwan

Organizer's Brief Biography

Chia-Huang Wu received a Ph.D. degree in Industrial Engineering and Management from National Chiao-Tung University, Hsinchu, Taiwan. He is currently an Associate Professor at National Yang Ming Chiao-Tung University. His research interests include process capability analysis, applied statistics, queueing systems, and optimization theory. His research results have been published on various SCI journals such as Quality and Reliability Engineering International, European Journal of Industrial Engineering, Applied Mathematical Modelling, Computers and Operations Research, Computers and Industrial Engineering, Reliability Engineering and System Safety, etc.