

University of Southern California

**DANIEL J. EPSTEIN DEPARTMENT OF
INDUSTRIAL AND SYSTEMS ENGINEERING**

EPSTEIN INSTITUTE SEMINAR • ISE 651 SEMINAR

***Recent Advances and Trends of Predictive
Manufacturing Systems in Big Data Environment***

Dr. Jay Lee

**Ohio Eminent Scholar and L.W. Scott Alter Chair Professor
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&

Director

**NSF Multi-Campus Industry/University Cooperative Research Center
On Intelligent Maintenance Systems (IMS)**

**University of Cincinnati, University of Michigan, Missouri University of S&T,
University of Texas-Austin**

ABSTRACT

In today's competitive business environment, companies are facing challenges in dealing with big data issues for rapid decision making for improved productivity. Many manufacturing systems are not ready to manage big data due to the lack of smart analytics tools. As more software and embedded intelligence are integrated in industrial products and systems, predictive technologies can further intertwine intelligent algorithms with electronics and tetherfree intelligence to predict product performance degradation and autonomously manage and optimize product service needs,

The presentation will address the trends of manufacturing transformation in big data environment as well as the readiness of smart predictive informatics tools to manage big data to achieve transparency of machine health, process quality, factory productivity. Advanced prognostics technologies with case studies will be presented. In addition, research advances in designing self-maintenance machinery, cloud-based cyber-physical modeling for next-generation products and machines, prognostics-ready sensors, etc. will be discussed.

**TUESDAY, NOVEMBER 19, 2013
GRACE FORD SALVATORI (GFS) ROOM 101
3:30 – 4:50 PM**

SPEAKER BIO



Jay Lee

Dr. Jay Lee is Ohio Eminent Scholar and L.W. Scott Alter Chair Professor at the Univ. of Cincinnati and is founding director of National Science Foundation (NSF) Industry/University Cooperative Research Center (I/UCRC) on Intelligent Maintenance Systems (IMS www.imscenter.net) which is a multi-campus NSF Industry/University Cooperative Research Center which consists of the Univ. of Cincinnati (lead institution), the Univ. of Michigan, Missouri Univ. of S&T, and Univ. of Texas-Austin. The Center has developed partnerships with over 80 companies from 15 countries since its inception in 2001. The Center has developed a spin-off company Predictronics with support from NSF ICorps Award in 2012. His current research focuses on smart predictive analytics for product design, manufacturing, and maintenance systems.

Currently, he also serves as advisor to a number of global organizations, including a member of the Manufacturing Executive Leadership Council, member of International S&T Committee of Alstom Transport, France, Scientific Advisory Board of Flanders' MECHATRONICS Technology Centre (FMTC) in Leuven, Belgium, Scientific Advisor Board of SIMTech, Singapore, etc. In addition, he serves as editors and associate editor for a number of journals including IEEE Transaction on Industrial Informatics, Int. Journal on Prognostics & Health Management (IJPHM), etc.,

Previously, he served as Director for Product Development and Manufacturing at United Technologies Research Center (UTRC), E. Hartford, CT as well as Program Directors for a number of programs at NSF during 1991-1998, including the Engineering Research Centers (ERCs) Program, the Industry/University Cooperative Research Centers (I/UCRCs) Program, and the Materials Processing and Manufacturing Program. He also served as advisor to a number of universities including Cambridge Univ., Johns Hopkins Univ. etc.

He is a Fellow of ASME, SME, as well as a founding fellow of International Society of Engineering Asset Management (ISEAM). He is a frequently invited speaker and has delivered over 180 invited keynote speeches at major international conferences and has over 15 patents and 2 trademarks (Watchdog Agent™ and Dominant Innovation™). He received a number of awards including the most recent Prognostics Innovation Award from National Instruments in 2012.