

Professor Jay Lee

Ohio Eminent Scholar and L.W. Alter Chair Professor, Univ. of Cincinnati
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Citizenship: U.S.

Current Research Areas: Advanced Prognostics, Design of Self-Maintenance Systems, Dominant Service Innovation (www.imscenter.net & www.dominantinnovation.com)

A. Professional Preparation

George Washington University	Mechanical Engineering	D.Sc.,	1992
SUNY- Stony Brook	Industrial Management	M.S.,	1987
Columbia Univ.	Mechanical Engineering	Doctoral Research	1985-8
University of Wisconsin-Madison	Mechanical Engineering	M.S.,	1983
Tamkang University, Taiwan	Mechanical Engineering	B.S.,	1979

B. Appointments

6/2005-present	Ohio Eminent Scholar and L.W Scott Alter Chair Professor in Advanced Manufacturing, Dept. of Mechanical Engineering, Univ. of Cincinnati & Director of NSF Industry/University Cooperative Research Center (I/UCRC) on Intelligent Maintenance Systems (IMS) Center, University of Cincinnati, Univ. of Michigan, and Missouri Univ. of S&T
8/2000 – 5/2005	Wisconsin Distinguished and Rockwell Automation Professor Dept. of Industrial and Manufacturing Engineering, Univ. of Wisconsin-Milwaukee & Director of NSF Industry/University Cooperative Research Center (I/UCRC) on Intelligent Maintenance Systems (IMS)
1998 - 8/2000	Director, Product Development and Mfg Department, United Technologies Research Center (UTRC), E. Hartford, CT
1991-1998	Program Director, Div. of DMII and EEC, National Science Foundation
1988-1991	Program Director, Materials Handling Automation Program, USPS Advanced Technology, Department, Washington, DC
1983-1987	Robotics Vision Systems, Inc. (RVSI), Hauppauge, NY
1992-1997	Adjunct Professor, Johns Hopkins Univ., Baltimore, MD

C. Selected Publications (over 150 publications in refereed journal and conferences)

1. Book on "Modern Computer-aided Maintenance: *Methodology and Practices*," co-author with Dr. Ben Wang, Kluwer Academic Publishing, 1998.
2. Lee, J. "Machine Performance Assessment Methodology" Report on Frontiers in Engineering, pp. 75-83, National Academy of Engineers, March 1999.
3. Djurdjanovic, Dragan, Ni, J, Lee, J., "Time-frequency Based Sensor Fusion in the Assessment and Monitoring of Machine Performance Degradation," *Proceeding of ASME IMEC&E*, 2002, Nov. 2002.
4. Lee, J., "e-Manufacturing Systems: fundamental and tools," *Int. Journal of Robotics and Computer-integrated manufacturing*, Vol 9. Issue 6, pp 501-507, Dec. 2003..
5. Qu, L.S., Li, L., Lee J., "Cybernetics in Machinery Diagnosis and Prognostics," Special Issue on Intelligent Maintenance Systems, *Engineering Informatics Journal (formerly AI in Engineering)*, Pages 107-189, Volume 17, Issues 3-4, , pp 142-150, July-October 2003
6. Djurdjanovic, D., Lee, J., Ni, J., Watchdog Agent—An Infotronics-based Prognostics Approach for Product Performance Degradation Assessment and Prediction, Special Issue on Intelligent Maintenance Systems, *Engineering Informatics Journal (formerly AI in Engineering)*, Pages 107-189, Volume 17, Issues 3-4, , pp110-125. July-October, 2003
7. Takata, S., Kimura, F., , F.J.A.M. van Houten, Westkämper E., Shpitalni, M., , Ceglarek D., Lee, J., "Maintenance: Its Role in Life Cycle Management Systems," *CIRP General Assembly*, Aug. 2004.
8. Chen, Z., Lee, J. Qiu, H., "Intelligent Infotronics System Platform for Remote Monitoring and E-Maintenance," *International Journal of Agile Manufacturing, Special Issue on Distributed E-Manufacturing*, volume 8, No. 1 issue, 2005.
9. Yan, J and Lee, J., Machine Degradation Assessment and Root Cause Classification Using Logistic Regression Method, *ASME Journal of Manufacturing Science and Engineering*, vol. 127, pp. 912-914, November 2005.
10. Qiu, H., Lee, J., Lin, J., YU, G, Wavelet filter-based weak signature detection method and its application on rolling element bearing prognostics, *International Journal of Sound and Vibration*, volume 289(4-5), , pages 1066-1090, February 2006.
11. Lee, J., Ni, J., (etc), Djurdjanovic, D "Intelligent Prognostics Tools and E-Maintenance," *Int. Journal of Computer in Industry*, Volume 57, Issue 6, August 2006.

12. Lee, J., Liao, H.T., Predictive Monitoring and Failure Prevention of Vehicle Electronic Components and Sensor Systems, Transaction of SAE, paper no. 2006-01-0373, 2006
13. Yan, Jihong, Isobe N., and Lee, J., "Fuzzy Logic Combined Logistic Regression Methodology for Gas Turbine First Stage Nozzle Life Prediction", *Applied Mechanics and Materials*, 10-12: 583-587, 2008.
14. Liao, L., Wang, H., and Lee, J., "Reconfigurable Watchdog Agent® for machine health prognostics," *International Journal of COMADEM*, Vol. 11, No.3, pp. 2-15, 2008.
15. Wang, T., Yu, J., Siegel, D., and Lee, J., "A Similarity-Based Prognostics Approach for Remaining Useful Life Estimation of Engineered Systems," Proceedings of 2008 Intl. Conference on PHM. Oct. 2008.

D. Selected Current Research Support (for the past three years)

1. "NSF-Industry/University Cooperative Research Center on Intelligent Maintenance Systems," NSF (EEC-0117518), \$400,000, 8/1/01-7/31/06.
2. NSF Industry/University Cooperative Research Center on Intelligent Maintenance Systems," NSF (EEC-0117518), \$200,000 10/1/06-9/30/09.
3. Development of Web-enabled Informatics Platform for Machinery Prognostics, NSF- EEC, \$142,000,09/01/2001 – 12/01/2005(Co-P.I. with Yoram Koren, Univ. of Michigan)
4. Informatics Platform for Prognostics and Maintenance Optimization, NSF- INT \$100,000 for 2 years, 09/01/2002 – 09/01/2006.
5. Collaborative Research – Predictive Infotronics Agent for Integrated Product Life Cycle Support, NSF – EEC, \$107,800 for 3 years, 9/1/03 – 8/31/06
6. Collaborative Research on a Unified Prognostics Approach for Vehicle Electronics using Physics-of-Failure Driven Sensor Fusion, NSF, \$100,000 for 2 years, 10/01/2005 – 09/30/2007
7. Intelligent Maintenance of Complex Systems using an Integrated Cumulative Damage Model and Distributed Agent-Based Maintenance Decision-Making, NSF, \$75,000 for 2 years, 10/01/2005 – 09/30/2007.
8. NSF Fundamental Research on Engineering Immune Systems, \$150K (in partnership with Univ. of Michigan and Missouri Univ. of S&T), 2008-2010.
9. Selected Active Industry Contracts: 1.) Novel Sensor for Smart Hose, Parker Hannifin; 2.) Prognostics of GE Jet Engine; 3.) Feasibility Studies of Prognostics for Critical Components in Combat Vehicle, TARDC. etc.
10. IMS Center Membership Fees (\$40K/year for Full Member and \$12K/year for Affiliate Member)—there are over 40 active members including GM, Ford, DaimlerChrysler, Toyota, GE Aviation, Rockwell Automation, Harley-Davison, Honeywell, Boeing, Caterpillar, Festo, Samsung, Toshiba, Komatsu, Omron, National Instruments, Advantech, Chevron, BorgWarner, Parker Hannifin, Bosch, McKinsey& Company, Nissan, Siemens, CISCO, etc.

E. List of Current Role in the Professional Community

- ◆ Fellow of Society of Manufacturing Engineer (SME) since 2000
- ◆ Fellow of American Society of Mechanical Engineer (ASME) since 2004.
- ◆ Fellow of International Society of Engineering Asset Management, 2007-present.
- ◆ Chief Editor, Int. Journal of Asset Engineering and Management, Springer Publishing, 2006-present.
- ◆ Member of Editorial Board, IEEE Transactions on Industrial Informatics, 2007-present.
- ◆ Member of Editorial Board, Int. Journal on Service Operations and Informatics, 2005-present.
- ◆ Member of Editorial Board, Int. Journal of Reliability, Quality, and Safety Engineering, World Scientific Press, 2001-present.
- ◆ Member of Editorial Board, The International Journal of Knowledge Engineering and Data Mining (IJKEDM), 2008-present.
- ◆ Int. Advisory Editorial Board, *Journal of Tsinghua Science and Technology*, 2001-present.
- ◆ Member of Editorial Board, International Journal on Frontiers of Mechanical Engineering in China (*Springer*), 2005-present.
- ◆ International Editorial Board, *International Journal on Business Performance Management* (Interscience Enterprise Ltd., Switzerland), 1997-present..

F. Selected Awards

- 2008 CIE-USA Distinguished Service Award.
- 2007, Professor of the Year Award, College of the Engineering, Univ. of Cincinnati.
- 2003, Milwaukee Mayor Technology Innovation Award.
- 2002, *Smartlink* Fellow Award, Australia
- 1996 Japan Society of Promotion of Science (JSPS) Fellowship Award
- 1995 Japan Science and Technology Agency (STA) Fellowship Award
- 1992, Outstanding Young Manufacturing Engineer Award, Society of Manufacturing Engineers (SME)

G. Selected Honors

- China Ministry of Education Changjiang Scholar Chair Professor (2005) and Co-Director of Industrial Innovation Center (IIC), , Shanghai Jiao Tong Univ., 2001-present
- Distinguished Scheme Visiting Professorship on Intelligent Service Systems, Hong Kong Polytechnic Univ., 2003-present.
- Invited Guest Professor on Product Service Systems, Cranfield Univ., 2006-present.
- Invited Guest Professor, Lulea Univ., 2006-present.
- Invited Guest Professor, Harbin Institute of Technology, China, 2007-present.
- Honorary Professor, City Univ. of Hong Kong, 2002-present.
- Visiting Fellow, SIMTech, Singapore, 2007-present.

H. Delivered Keynote Speeches (for the past three years)

- ◆ Invited Keynote Speaker, Remote Device Monitoring and Mgt. Conf., Orlando, FL, Feb. 1-2, 2005.
- ◆ Invited Keynote Speaker on Smart Machine and Zero Breakdown: A Myth or Reality, International Manufacturing Leaders Forum (IMLF), Adelaide, Australia, Feb. 28- March 3, 2005.
- ◆ Invited Feature Speaker, Asian Pacific Manufacturing Roundtable, Westin Hotel, Shanghai, March 16-17, 2005, Organized by *The Economist*.
- ◆ Invited Keynote Speaker on Managing Product and Service Innovation, PICMET 2005, Portland, OR. August 1-4, 2005.
- ◆ Invited Keynote Speaker, International Forum on Strategic Partnerships: Managing Technology in Networks, Turkey, Sept. 20-22, 2005.
- ◆ Invited Keynote Speaker, International Conference in Mechanical Engineering, Nanjing Institute of Technology, Nanjing, China, Oct. 26-28, 2005.
- ◆ Invited Plenary Speaker, Global Manufacturing Conference, Zejinag Univ., Oct. 31-Nov. 1, 2005.
- ◆ Invited Keynote Speaker, Korea Institution for Plant Engineering Conference, KIPE, Oct. 10-11, 2005.
- ◆ Invited Keynote Speech, Japan Annual TPM Conference, Tokyo, Nov. 16-17, 2005.
- ◆ Invited Keynote for Tamkang Famous People Seminar Series, Tamkang Univ., Dec. 26, 2005.
- ◆ Invited Keynote Speaker, Ministry of Education on Industry/University Cooperative Education, Kaoshiung, Taiwan, Dec. 27, 2005.
- ◆ Invited Plenary Speaker, Industry/University Collaboration Workshop, Taiwan Univ. of S &T, Taipei, Jan. 12-13, 2006.
- ◆ Invited Keynote Speaker, 19th Int. Congress on Condition Monitoring and Diagnostics Engineering Management (COMDAM 2006), Lulea Univ., Sweden, June 12-15, 2006.
- ◆ Invited Keynote Speaker, World Congress Engineering Asset and Management, Gold Coast, Australia, July 11-15, 2006.
- ◆ Invited Keynote Speaker, Design of Intelligent Maintenance Systems, NI Week, Austin, TX, August 11, 2006.
- ◆ Invited Keynote Speaker, Int. Conference on Industrial Informatics (INDIN 2006), Singapore, August 16-18, 2006.
- ◆ Invited Feature Speech, Product Service Systems (PSS) Industry Day, Cranfield Univ., UK, Sept. 7, 2007.
- ◆ Invited Keynote Lecture, Recent Advances and Trends in E-Manufacturing, Networked Manufacturing Forum, Xian Jiao Tong Univ., China, Sept. 20, 2006.
- ◆ Invited Keynote Speaker, International Manufacturing Conference in China (IMCC 2006), Xian, Sept. 21-23, 2006.
- ◆ Invited Keynote Speaker, 1st Int The First International Conference on Maintenance Engineering (ICME2006), Chengdu, China, October 15-18, 2006,
- ◆ Invited Feature Speaker, Next-Generation Smart Machines, International Manufacturing Leader Forum (IMLF), Taipei, Oct. 23-25, 2006.
- ◆ Invited Feature Speaker, EU ICT Workshop, Helsinki, Finland, Nov. 21-22, 2006.
- ◆ Invited Keynote Speaker, MainTrain, 2006, Novotel Toronto Center, Canada, Nov. 28-29, 2006.
- ◆ Invited Feature Speaker for Machine Innovation and Smart Assembly, ARC Forum, Orlando, FL., Feb. 13-15, 2007.
- ◆ Invited Keynote Speaker, Annual Manufacturing Forum (AMF), Singapore, March 28, 2007

- ◆ Invited Feature Speaker, Global Logistics and Supply Chain Conference, Nansha, China, May 26-27, 2007.
- ◆ Invited Keynote Speaker, Japan Part Engineers Society Annual Meeting, Aoyama Univ., Tokyo, Japan, June 7, 2007.
- ◆ Invited Feature Speaker on Co-Operative Education, Chinese National Academy of Engineering Meeting, Beijing, China, June 2, 2007.
- ◆ Invited Keynote Speaker, Portland Int. Conference on Management of Technology (PICMET 2007), Portland, OR, August 5-8, 2007.
- ◆ Invited Keynote Speaker, 6th International Conference on e-Engineering & Digital Enterprise Technology, Harbin, China, August 26-29, 2007
- ◆ Invited Keynote Speaker, Korea Plant Maintenance Society Conference, Oct. 11-12, 2007.
- ◆ Invited Keynote Speech at International Conference on Product and Manufacturing Systems (PDMS), Chongqin Univ., Oct. 12-15, 2007.
- ◆ Invited Keynote Speaker, ISA Expo, Brazil, Sao Paulo, Nov. 27-28, 2007.
- ◆ Invited Keynote Speech, 3rd GM R&D Forum on Diagnostics and Prognostics, GM R&D in Bangalore, India, Dec. 1, 2007.
- ◆ Invited Keynote Speaker, Integrated Vehicle Health Management (IVHM) Symposium, Leela Hotel, Bangalore, India, Dec. 3, 2007.
- ◆ Invite Keynote Speech, 8th Asia Pacific Industrial Engineering & Management System & 2007 Chinese Institute of Industrial Engineering joint conference (APIEMS & CIIE 2007), Kaohsiung, Taiwan, December 9 to 12, 2007.
- ◆ Invited Keynote Speaker, RFID Workshop, National Taiwan Univ., May 23, 2008.
- ◆ Invited Keynote Speech, International Conference on Frontier in Design and Manufacturing, Tianjin, China, Sept. 23-26, 2008.
- ◆ Invited Plenary Speaker, Salzburg Global Seminar, Odeassa, Ukraine, Oct. 1-4, 2008
- ◆ Invited Keynote Speech, The 4th Asia-Pacific International Conference on Knowledge Management-Jointly with The 9th International Symposium on Knowledge and Systems Sciences, South China Univ. of Technology, GuangZhou, Dec. 11-12, 2008.
- ◆ Invited Keynote Speech on Trends and Recent Advances on ICT-Enabled Smart Product and Service Systems, Strategic Review Board for the S&T Advisory Group, the Executive Yuan, Taiwan, Dec. 15-18, 2008.

Selected Interview Articles By Magazines

1. Interviewed by *SME Manufacturing Engineering Magazine* on "Moving toward the E-Factory," Nov. Issue, 2001, Society of Manufacturing Engineers (SME).
<http://www.sme.org/gmn/mag/2001/01nom042/01nom042.pdf>
2. Interviewed by *SME Newsletter* on Less Factory Downtime With "Predictive Intelligence", SME, March 2002.
<http://www.sme.org/cgi-bin/get-press.pl?&&20021125&TE&&SME&>
3. Interviewed by *Managing Automation Magazine* on a special article on "Hatching New Technologies," March issue, 2002. <http://www.managingautomation.com/>
4. Interviewed by Forrester Research on Collaborative Product Life Cycle, June 2002.
<http://www.forrester.com/Research/ThankYou/PDF/0,2254,23673,00.pdf>
5. Interview with *Fortune Magazine* on a special article on "Hot Technologies for Future Production and Products, July issue, 2002.
<http://www.fortune.com/fortune/technology/articles/0,15114,370864,00.html>
6. Interview with Harbor Research on Pervasive Internet and Intelligent Maintenance Systems, "Approaching Zero Downtime," Feature April 2003, Harbor Research Pervasive Internet Report April 2003. <http://www.harborresearch.com>
7. Interview with *Industry Week*, on View Machinery as Functional, by John Teresko, May 2003
<http://www.industryweek.com/CurrentArticles/asp/articles.asp?ArticleID=1431>
8. Interviewed by *Managing Automaton*, "Using Prognostics to Avert Potential Failures", *Managing Automation*, September 2003. <http://www.managingautomation.com/valuestream/interview.html>

9. Automation World,
http://www.automationworld.com/articles/Features/671.html?ppr_key=05.2004&sky_key=05.2004&term=05.2004
10. "Feature Articles: Uptime," Packaging Machinery Technology, June, 2004
<http://www.pmtdirect.com/website/article.asp?id=267>
11. Smart Sensors raise the automation IQ, Article From Automationworld.com, May 2004,
<http://www.robots.com/articles.php?tag=523>
12. [The Next Wave of Disruptive Technologies](#), Cover story of Managing Automation Magazine, May 2005.
13. [AI in Control](#) , Automotive Design™ and Production (Feature article), July, 2005.
14. [Transforming Maintenance into Predictive Reliability](#), Advisor column of the Reliable Plant Magazine, July-August, 2005. <http://www.reliableplant.com/article.asp?articleid=97>
15. Editor, Automation World, Sept. 2005. <http://www.automationworld.com/view-1513>
16. [Intelligent Maintenance Draws Interest](#), News at Automation Word (www.automationworld.com), Jan. 6, 2006. <http://www.automationworld.com/view-1811>
17. Profit from Condition Monitoring, By James R. Koelsch, Contributing Editor, Automation News, December 2006, <http://www.automationworld.com/view-2758>
18. The quest for zero downtime: Intelligent sensor networks could let production equipment notice maintenance problems before they happen, Machine Design Magazine, June 2007 issue.
<http://www.machinedesign.com/ASP/viewSelectedArticle.asp?strArticleId=62737&strSite=MDSite&Screen=CURRENTISSUE&CatID=3>
19. Who will break the mold? Automation World, June 2007, <http://www.automationworld.com/view-3234>
20. Reaching Smarter Factory, Industry Week Magazine, Sept. 2007 issue.
<http://www.industryweek.com/ReadArticle.aspx?ArticleID=14779>

BIOGRAPHICAL SKETCH

Dr. Jay Lee is Ohio Eminent Scholar and L.W. Scott Alter Chair Professor in Advanced Manufacturing 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) which is supported by over 40 companies including P&G, Toyota, GE Aviation, AMD, Caterpillar, CISCO, Siemens, GM, Harley-Davidson, Parker Hannifin, Spirit AeroSystems, Nissan (Japan), ITRI (Taiwan), Omron (Japan), Syncrude (Canada), etc.

His current research focuses on Autonomic Computing and Advanced Prognostics, Embedded IT for Smart Service Systems, Design of Remote Monitoring and Intelligent Maintenance Systems, Dominant Service Innovation Tools (www.imscenter.net & www.dominantinovation.com).



Previously, he held a position as Wisconsin Distinguished Professor and Rockwell Automation Professor at the Univ. of Wisconsin-Milwaukee. Prior to joining UW-Milwaukee, he served as Director for Product Development and Manufacturing Department 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 (MPM) of Div. of Design, Manufacture, and Industrial Innovation (DMII).

Currently, he serves as an advisor for a number of organizations including Industrial Technology Research Institute (ITRI) in Taiwan, Japan Productivity Center (JPC), and Academy of Machinery Science and Technology in China. Previously, he had served on Board on Manufacturing and Engineering Design (BMAED) of National Research Council during 2000-2005, Board of Directors for the National Center for Manufacturing Science (NCMS) during 1999-2001, Chairman of the Manufacturing Engineering Div. (1998) and Materials Handling Engineering Div. (1992-1994) of ASME, as well as advisory member for a number of academic institutions including Johns Hopkins Univ., Cambridge Univ. of UK, etc.

Currently, he also serves as associate editors for a number of international journals including *IEEE Transaction on Industrial Informatics*, *Int. Journal on Service Operations and Informatics*, *International Journal on Quality, Reliability, and Safety*, etc *Tsinghua Science & Technology* . etc. He has authored/co-authored over 150 technical publications, edited two books, contributed numerous book chapters, five U.S. patents, 2 trademarks, and had delivered numerous invited lectures and speeches, including over 130 invited keynote and plenary speeches at major international conferences.