Data Science for Smart Manufacturing

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Overview

This course provides an introductory, hands-on treatment of broad aspects of data analytics and data science that is emerging as a vital tool for manufacturing engineers (professionals and researchers alike). Recent advances in sensors, machine tool and plant-floor and system-wide sensor technologies (MEMS/NEMS/RFID) has opened new challenges and opportunities for harnessing information to substantially improve quality assurance, process design and discovery.

This course will draw from the international faculty member's experiences to introduce (with specific case studies) the principles and applications of various statistical learning and predictive modeling methods for quality assurance, process design and discovery in manufacturing.

Dates for the Course	**May 15 - 26, 2017**
Host Institute	**IIT Madras**
No. of Credits	**2**
Maximum No. of Participants	**60**
You Should Attend If...	- All engineers, managers and faculty members with interests in the emerging themes in predictive analytics. - Anyone with responsibility to improve the total cost, quality and productivity of precision components and industrial manufacturing. - Anyone responsible for precision components design and development. - Anyone responsible to develop and implement data-driven manufacturing process solutions. - Anyone in R&D, Research Institutes or academia supporting any of the above developments in the manufacturing sector.
Course Registration Fees	The participation fees for taking the course is as follows: **Student Participants:** Rs.2000 **Faculty Participants:** Rs.6000 **Government Research Organization Participants**: Rs.10000 **Industry Participants:** Rs.20000 The above fee is towards participation in the course, the course material, computer use for tutorials and assignments, and laboratory equipment usage charges. **Mode of payment: Demand draft in favor of "Registrar, IIT Madras" payable at Chennai**
Accommodation	The participants may be provided with hostel accommodation, depending on the availability, on payment basis. Request for hostel accommodation may be submitted through the link: http://hosteldine.iitm.ac.in/iitmhostel

Course Faculty

Satish T. S. Bukkapatnam received his Ph.D. degree in industrial and manufacturing engineering from the Pennsylvania State University. He currently serves as Rockwell International Professor with Department of Industrial and Systems Engineering, Texas A&M University, College Station, TX, USA. He is also the Director of TEES Institute for Manufacturing Systems at Texas A&M University, and has joint appointments with Biomedical Engineering and Mechanical Engineering departments. His research addresses the harnessing of high-resolution nonlinear dynamic information, especially from wireless MEMS sensors, to improve the monitoring and prognostics, mainly of ultraprecision and nano manufacturing processes and machines, and cardiorespiratory processes. His research has led to 133 peer-reviewed publications (74 published/ accepted in journals and 59 in conference proceedings); five pending patents; $5 million in grants as PI/Co-PI from the National Science Foundation, the U.S. Department of Defense, and the private sector; and 10 best-paper/poster recognitions. He is a Fellow of the Institute for Industrial and Systems Engineers (IISE), and has been recognized as with Oklahoma State University Regents distinguished researcher, Halliburton outstanding college of engineering faculty, IISE Eldin outstanding young industrial engineer and the Society of Manufacturing Engineers Dougherty outstanding young manufacturing engineer awards.

N. Ramesh Babu received his Ph.D. degree in Mechanical Engineering from the Indian Institute of Technology Madras. He currently serves as V. Balaraman Institute Chair Professor at the Department of Mechanical Engineering, Indian Institute of Technology Madras. His areas of expertise cover abrasive machining processes, advanced machining processes, automation in manufacturing. He has more than three decades of teaching and research experience at the Institute. His research has led to 156 peer reviewed publications (60 published/accepted in Journals and 96 in conference proceedings; Rs.700 million in grants as PI/Co-PI from various National and International funding agencies, multi-national companies, public and private sector, and 10 best paper/poster recognitions. He is a Fellow of Andhra Pradesh Academy of Sciences (FAPAS) and an honorary member of The Romanian Society of Mechanical Engineering. He is the Principal Coordinator for Centre of Excellence on Machine Tools and Production Technology Madras, set up for translational research in machine tools sector at IIT Madras. He is also the consultant for multi-national companies engaged in sheet metal working machinery and abrasive products manufacture and many Indian machine tool and automobile sectors. He has demonstrated the technical effectiveness of many processes and algorithms over a period of three decades for industrial applications.

Course Coordinator

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