Smart Manufacturing PHM Panel

PHM Society Conference 2018 – Panel Session 2: Manufacturing

Session Chair: Dr. Radu Pavel
                     VP, Chief Technology Officer and Chief Engineer

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Industry 4.0

- Business Advising, Manufacturing Process Solutions & Digital Manufacturing
- State and Federal Manufacturing Extension Partnership Center
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- Fully Instrumented Technology Machining Laboratory
- We leverage emerging technologies, best practices and digital tools to enhance the way our clients work

Smart Manufacturing

The fourth industrial revolution is being driven by digitalization, connectivity and automation.

Vision: Products and machines will be able to communicate with each other, learn from each other, and work directly with each other without human intervention.

Prognostics and Health Management (PHM) for manufacturing equipment and operations is a key technology area that both feeds and uses the digital thread of the Factory of the Future.

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The Panel Speakers
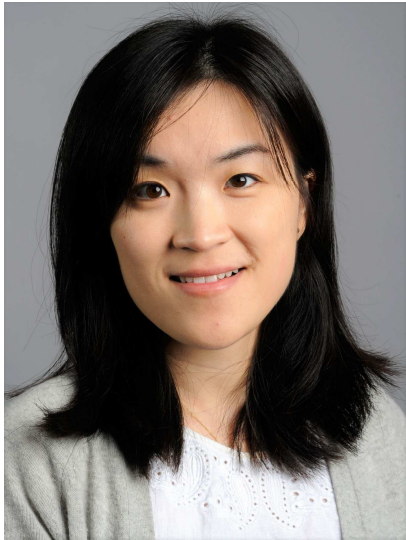
Dr. Xiaoning Jin
Assistant Professor,
Northeastern Univ.

Dr. Justinian Rosca
Senior Key Expert,
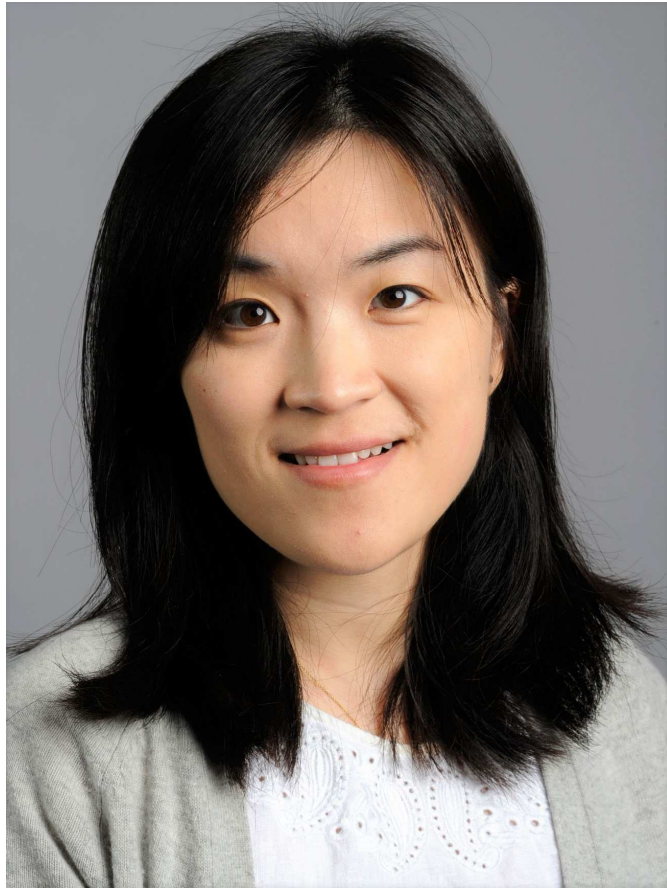Siemens

Dr. Michael Sharp
Reliability Engineer,
NIST

Tyler Vizek
Project Innovation
Engineer, DMDII

Lou Zhang
Chief Data Scientist
MachineMetrics, Inc.

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Pushing the Boundaries: Engineering Based Data-Driven Analytics For Intelligent Manufacturing

Dr. Xiaoning Jin is currently an Assistant Professor in the Depa tment of Mechanical and Industrial Engineering at Northeastern University. She received her PhD degree in Industrial and Operations Engineering from the University of Michigan. Jin has extensive experience in the area of modeling and analysis for manufacturing processes and systems, with a specialization in diagnostics and prognostics (D&P) and predictive decision making. She has led several projects in the NSF I/UCRC Center for Intelligent Maintenance Systems at the University of Michigan. Her works have been applied to a variety of industrial applications ranging from automotive manufacturing, roll-to-roll printing process control, operations and maintenance decision support for smart ships, etc.

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AI in Future Automation: The "Adaptation" Edge

Dr. Justinian Rosca is Senior Key Expert of Siemens Corp., Corporate Technology in Princeton NJ, where he has been managing research and innovation since 1999. He received his Ph.D. and M.S. degrees in Computer Science from the University of Rochester, NY. He also holds the M.S. degree in Computers and Control Engineering from Polytechnic University Bucharest. He was Affiliate Professor at the University of Washington, 2008-2011, and obtained a certificate in executive management for innovation, from the University of Pennsylvania, Wharton School of Business. Since 2017, Dr. Rosca is Research Affiliate at Princeton University.

Dr. Rosca's primary research interests span sensing and communication, statistical signal processing, machine learning, probabilistic inference, and artificial intelligence, with an emphasis on embedded intelligence in autonomous systems. Dr. Rosca holds close to 50 patents, 100 publications in the areas of signal processing, machine learning, and cyber-physical systems, and co-authored two books in mathematics and signal processing.

Harnessing Reliability Information for Better Decision Making

Dr. Michael E. Sharp is a Reliability Engineer at the National Institute of Standards and Technology (NIST) located in Gaithersburg, MD. He received a B.S (2007), M.S. (2009), and Ph.D. (2012) in Nuclear Engineering from the University of Tennessee, Knoxville, TN, USA. His research interests include signal analytics, machine learning, artificial intelligence, optimization, and natural language processing. Michael has worked on a wide array of projects including image processing for elemental material recognition, navel reliability monitoring, and manufacturing robotics diagnostic monitoring. He currently works with the NIST Systems Integration Division for Smart manufacturing.

DMDII Future Factory – Accelerating PHM Technology Adoption Through Advanced Research and Agile Testbeds

Tyler Vizek is a Project Innovation Engineer for DMDII at UI LABS leading the Future Factory thrust area. Tyler provides programmatic oversight to industry and academic project teams and helps ensure that their research is headed in a value-added direction that aligns with the Institute's Strategic Investment Plan. Additionally, he develops forward-looking strategy to help bring impactful initiatives like project integrations and manufacturing testbeds to DMDII's Future Factory floor. Prior to joining DMDII, Tyler worked at Northrop Grumman as an application engineer for their Product Lifecycle Management (PLM) tool suite and as a mechanical engineer designing hardware mockups for specialty test projects. He has a bachelor's degree in Mechanical Engineering from Purdue University.

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Manufacturing Analytics, Simplified

Lou Zhang is the Chief Data Scientist at MachineMetrics and leads all data science and predictive analytics initiatives. He has extensive experience with both the manufacturing industry and with developing predictive algorithms for time-series data. Prior to MachineMetrics, Lou worked with researchers at NIST on using ways to use big data in manufacturing and worked in the Strategic Analytics group at The Association for Manufacturing Technology (AMT). Lou was also a member of the Advanced Analytics team at IHS Markit, where he applied machine learning to predict various types of economic activity, such as car purchases, industrial chemical demand, and crude oil prices.

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