CCAM

SOLVING ADVANCED MANUFACTURING CHALLENGES

CCAM Automation Research Day

Wednesday, April 25, 2018

Sponsored by SIEMENS

AGENDA

8:30—9:00 **Introduction and Opening Remarks**

Will Powers, President & Chief Executive Officer, CCAM

Delegate Kirk Cox (R), Speaker of the House of Delegates for Virginia

Jaime Camelio, Ph.D., Chief Technology Officer, CCAM

9:00—9:30 **Enabling Digital Enterprise: Vision & Challenges**

Jim Rusk, Senior Vice President & Chief Technology Officer, Siemens PLM Software

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9:30—10:00 **The Network as a Tool for Manufacturing**

Dave Cronberger, Industrial Solutions Architect, CISCO

10:00—10:20 **Networking Break & NNS Digital Shipbuilding Mobile Experience (MX)**

10:20—10:50 **Measurements and Tools to Advance Robotics for Manufacturing**

Elena Messina, Program Manager, Robotic Systems for Smart Manufacturing; Leader, Manipulation & Mobility Systems Group; Intelligent Systems Division, NIST

10:50—11:10 **CCAM Adaptive Automation Program Update**

Matt Stremler, Research Manager—Adaptive Automation, CCAM

11:10—11:15 **Demo: Digital Factory—Visualization tools for deriving value from machine data (Sandvik & CCAM)**

Scott Lu, Sales Tools Manager, Global Digital Machining, Sandvik Coromant

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11:15—12:00 **Panel: Challenges Implementing the Intelligent Factory in Manufacturing**

- Dennis Brandl, President, BR&L Consulting, Inc.
- Carl Elks, Ph.D., Assistant Professor, Department of Electrical and Computer Engineering, VCU
- Moneer Helu, Ph.D., Group Leader, Life Cycle Engineering; Systems Integration Division, NIST
- Eric Holterman, Researcher, Intelligent Factory & Automation Systems, CCAM
- Haresh Malkani, Ph.D., Chief Technology Officer, CESMII
- Dan Saffer, Manager—Advanced Control, Arconic

Moderated by: Sydney G. Roberts, Ph.D., Director of Strategic Partnerships & Tim Ward, Manager of Research, CCAM

12:00—1:35 **Lunch, Tour & NNS Digital Shipbuilding MX** Lunch in Café | Tour starts at 1:00 in lobby | *Seminar room will be closed to non-members until we resume the program at 1:35 pm so please make sure you take your personal items with you.*

CCAM Member Representatives remain in Seminar Room for Closed Session & Working Lunch

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1:35—2:05 **Network Enabled Manufacturing Digital Thread**

Al Salour, Ph.D., Technical Fellow, Boeing Research & Technology

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2:05—2:35 **Lighting up the Digital Factory**

Lindsey Berckman, Senior Manager, Deloitte Consulting LLP

2:35—2:40 **Demo: Seamless Manufacturing—In-machine adaptation leveraging CAM server technology (Siemens & CCAM)**

Tim Bakker, Ph.D., Researcher—Adaptive Automation, CCAM

2:40—3:00 **Networking Break & NNS Digital Shipbuilding MX**

3:00—3:30 **A Call to Automate the Automation**

Carlos Martinez, Research Team Manager—Applied Robotics, ABB

3:30—4:00 **State-of-the-Art and Challenges of Autonomous Robots**

Tomonari Furukawa, Ph.D., Professor, Virginia Tech

4:00—4:45 **Panel: Collaborative & Autonomous Robotics for the Intelligent Factory**

- Tim Bakker, Ph.D., Researcher—Adaptive Automation, CCAM
- Bob Grabowski, Deputy CTO, Advanced Robotics for Manufacturing (ARM) Institute
- David Hills, VP Research & Technology, Airbus Americas Inc.
- Travis Hite, Program Director - Link Lab at University of Virginia, UVA

Moderated by: Sydney G. Roberts, Ph.D., Director of Strategic Partnerships & Tim Ward, Manager of Research, CCAM

4:45—6:30 **Reception, Poster Session & NNS Digital Shipbuilding MX**

PRESENTERS

Lindsey Berckman is a Senior Manager in Deloitte's Manufacturing practice, specializing in analytic and digital factory solutions in the Aerospace & Defense and heavy Industrials industries. With a technical foundation in SAP and over 10 years of experience on the shop floor, she focuses on driving supply and demand planning and shop execution efficiencies leveraging predictive analytics and IoT solutions. Lindsey serves as the Smart Factory lead for Deloitte's Digital Manufacturing Enterprise effort. She graduated with a B.S.E. in Systems Science & Engineering from the University of Pennsylvania.

Dave Cronberger is an 19-year veteran of Cisco Systems. During that time, he has focused on solutions for the Internet of Things with customers in process and primarily automotive OEM's and other discreet manufacturers. In that role, Dave focused on developing highly reliable solutions that connected the plant floor to the business systems. Dave started in the industrial environments as a CNC mill operator and then programmer. Dave also developed industrial hydraulic and pneumatic logic automation solutions for customers prior to transitioning to networking.

Tomonari Furukawa is Professor at Virginia Tech and Director of Computational Multiphysics Systems Laboratory and Mitchell Robotics Laboratory. His research work focuses on inverse analysis and optimization methods in robotics and experimental/ computational mechanics where he currently has his particular interests in Bayesian estimation and control of autonomous systems, stochastic material characterization and structural health monitoring and multiphysics modeling and simulation. He received B.Eng. in Mechanical Engineering from Waseda University, M.Eng. in Mechatronic Engineering from University of Sydney and Ph.D in Quantum Engineering and Systems Science from University of Tokyo.

Carlos Martinez is a group leader at ABB Corporate Research in the Mechatronics and Sensors department. He holds a Bachelor's in Software Engineering from ITESM in Mexico in 1998, and his MBA from UCONN in 2010. He joined ABB in 1998 and has worked in different roles in the service department, product development, project management, and Research and Development.

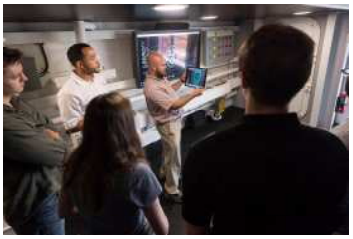
Elena Messina is Group Leader of the Manipulation & Mobility Systems Group of the Intelligent Systems Division (ISD) at the National Institute of Standards and Technology (NIST). She manages the Engineering Laboratory's Robotic Systems for Smart Manufacturing Program, which is focused on advancing the capabilities of agile, collaborative robots through the definition of performance requirements, metrics, test methods, tools, and testbeds. She is internationally recognized for her work in the development of performance metrics and evaluation methodologies for robotic and autonomous systems. Elena received her BS in Engineering Science at the University of Cincinnati.

Jim Rusk is senior vice president and Chief Technology Officer (CTO) for Siemens PLM Software. He is responsible for providing shared platform, architecture, innovation and development services. Since joining the company in 1988, he has held numerous positions in product development, product marketing and product management, technical support and sales. Notably, he led the Digital Simulation Solutions group where he was responsible for all aspects of the company's simulation business. Rusk received a Bachelor of Science degree in Engineering Mechanics from the University of Cincinnati. He is currently based in Siemens PLM Software's Milford, Ohio office.

Al Salour is a Boeing Technical Fellow and the enterprise leader for the Network Enabled Manufacturing technologies. He is responsible for systems approach to develop, integrate, and implement affordable sensor based manufacturing strategies and plans to provide real time data for factory systems and supplier networks. He is building a model for the current and future Boeing factories by streamlining and automating data management to reduce factory direct labor and overhead support, and promote manufacturing as a competitive advantage. Dr. Salour is the research investigator with national and international premiere universities and research labs. He is a member of Industrial wireless technical working group with NIST. Dr. Salour has 30 invention disclosures, 20 patents and 1 trade secret in manufacturing technologies.

Newport News Shipbuilding (NNS) Digital Shipbuilding Mobile Experience (MX)

Located just outside of CCAM's main entrance, the MX is a 53 foot trailer containing demonstration stations and content that provide an experiential learning overview of Newport News Shipbuilding's digital transformation process. The intent of the MX is to provide an immersive experience using digital tools currently in development.




ABOUT CCAM RESEARCH DAYS

CCAM Advanced Manufacturing Research Days provide a forum for thought leaders from industry, government and academia to explore common challenges and emerging solutions in a collaborative environment. CCAM's focus areas include: Adaptive Automation, Surface Engineering, Additive Manufacturing, and Machining Science & Technology. Throughout the year CCAM members and the public are invited to convene on select focus areas and research topics. A combination of subject matter expert presentations, interactive panels and ample networking time provides an opportunity for participants to gain insight from a wide variety of stakeholders. Research days also include tours, demos and a networking reception with poster presentations by university partners and CCAM researchers.

ABOUT CCAM

CCAM's mission is to solve advanced manufacturing challenges. Their talent-centric collaborative accelerates global innovation and productivity for their members. Members guide the research, leveraging talent and resources within CCAM and Virginia's top universities, that enables them to pool R&D efforts to increase efficiencies. Results can then be applied directly to the factory floor, turning ideas into profit faster and more affordably than ever before. CCAM is located in a state-of-the-art research facility in Prince George County, Virginia. For more information, visit: www.CCAM-VA.com

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