



# **AI MANUFACTURING 2020**

**August 20-27, 2020, A Virtual Conference**

## **AI Challenges in Cyber Manufacturing**

*Mahyar Asadi, Manager of Advanced Engineering Services • Applus Canada*

Cyber-manufacturing enables a smart digital-twin of manufacturing processes that can wisely act without being explicitly programmed. However, the cognitive computing part of the cyber-twin is time-intensive beyond the requirement of a smart system. On the other hand, many AI solutions rely on a large data set that does not exist in many manufacturing systems. Therefore, current AI applications are mostly limited to real-time inspection, quality control, and predictive maintenance in manufacturing, where a set of embedded sensors can continually generate an extensive data set to form a machine-learning model for analysis. Smarting the engineering side of the manufacturing is a proactive cognition that uses limited data and active learning rather than large data mining. In this talk, Mahyar Asadi presents an actual metal fabrication project with multiple welds where a hybrid cyber-twin selects the best welding sequence for control of distortion in the final product. He discusses the challenges and solutions used in this project that forms a platform for other applications.



Mahyar Asadi is the manager of advanced engineering services at Applus Canada. Mahyar's technical background is digital engineering with a Ph.D. in computational weld mechanics. He has a strong track record of applying emerging technologies such as AI and Machine Learning in metal fabrication that involves welding and metal deposition. He is a Professional Engineer as well as holding an International Welding Engineering designation. He is also an adjunct professor at the University of British Columbia. His portfolio consists of several papers, presentations, workshops, seminars, and co-authoring a chapter for ASM Handbook on "Numerical Aspects of Welding."