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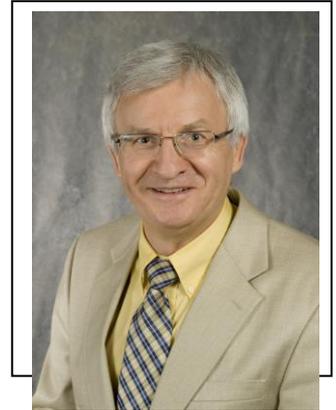icsi2018@i-sim.org;   www.i-sim.org/icsi2018

Invited Special Speech

Innovation Science and Applications: A Big Data Perspective

Speaker:

Andrew Kusiak, Professor of Mechanical and Industrial Engineering,
The University of Iowa

Speaker Biography:

Dr. Andrew Kusiak is a Professor in the Department of Mechanical and Industrial Engineering at The University of Iowa, Iowa City and Director of the Intelligent Systems Laboratory. He has chaired two departments, Industrial Engineering (1988-95) and Mechanical and Industrial Engineering (2010-15). His current research interests include applications of computational intelligence and big data in automation, manufacturing, product development, renewable energy, sustainability, and healthcare. He has published numerous books and hundreds of technical papers in journals sponsored by professional societies, such as the Association for the Advancement of Artificial Intelligence, the American Society of Mechanical Engineers, Institute of Industrial Engineers, Institute of Electrical and Electronics Engineers, Nature, and other societies. He speaks frequently at international meetings, conducts professional seminars, and consults for industrial corporations. Dr. Kusiak has held elected positions in professional societies as well as served at editorial boards of over fifty journals, including five different IEEE Transactions.

Professor Kusiak is a Fellow of the Institute of Industrial Engineers and the Editor-in-Chief of the Journal of Intelligent Manufacturing. Besides his academic appointment at the University of Iowa has held visiting positions at universities in Asia, Europe, and the Middle East.

His publications can be viewed at Google Scholar,   Research Gate,   Academia, and   PubMed

Abstract/Outline

The academic and practice communities are interested in unravelling the nature of innovation. Yet, the innovation process resembles more a mystery than a systematic approach. In fact, innovation is frequently equated with invention and creativity. Creativity is the ability to generate original ideas, concepts and objects. It accelerates innovation, which is most evident in industry. The path to innovation is currently more art than science. There is no deep understanding of the innovation process, which is complex and has not been well formalized. One path to progress in innovation science is in connecting seemingly unrelated ideas, e.g., biology and technology. Models of the market and products are needed to accelerate the process. It is likely that these models data science and evolutionary computation reflecting the dynamics of the market attributes. Basic models of innovation are illustrated with examples, include the big data scenarios.