ELECTRICAL & COMPUTER ENGINEERING RESEARCH SEMINAR Fall 2019

Real-time Analytics for Manufacturing Enterprises

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Abstract: Digital transformation, connected enterprise, and IOT are various names that refer to an increasing interest by the manufacturing industry to make better use of the data they generate. A key driver behind this heightened interest is the expectation that the business will benefit from mining actionable information out of that data.

Historically data analysis has been an offline exercise with algorithms that assume random access to the entire data of interest for analysis. In recent years, however, modern hardware and software technology have enabled manufacturing enterprises to systematically record operation data (both continuous and discrete data) at an ever increasing rate, resulting in massive volumes of data that could potentially grow without bound over time. Data science experts refer to these ever growing online data as *data streams*.

This talk will present a family of analytics engines that are designed to extract actionable information out of streaming operation data. The requirements for real time deployment of these analytics engines will be discussed in the context of several real-world applications. The talk will also briefly review some of the steps involved in embedding these analytics engines at the controller layer.

Biography

Dr. Bijan Sayyarrodsari is the Director of Advanced Analytics at Rockwell Automation. He leads research and development efforts that target computationally efficient algorithms for automated machine learning against streaming operation data. Of particular interest, is the deployment of automated ML at the edge (e.g. sensors, drives, PLC controllers), where the majority of the manufacturing data is generated. He received his Ph.D. degree from Information Systems Laboratory (Electrical Engineering Department) at Stanford University in 1999. He has been involved in the design, development, and deployment of advanced data-driven solutions for performance monitoring, diagnostics, control, and optimization in a wide-range of industrial applications for almost 20 years.