Department of Industrial, Systems, and Manufacturing Engineering
Seminar Presentation

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Title: Acquiring knowledge from sensor data

Date: Friday – March 29, 2019

Time: 11:00 am – 12:00 noon

Location: Engineering Building (EB) Room 211

Abstract

Acquiring meaningful information from sensor data requires in-depth understanding of physical phenomena measured by sensors. A sensor captures a time series that exhibits signals of static and dynamic phenomena. Extracting a useful signal from the time series becomes a challenge if the time series contains multiple signals coupled with electrical or mechanical noises. Numerous machine learning tools are instrumental in tackling such feature extraction problems. This seminar discusses about the use of linear/nonlinear regression methods, optimization algorithms, and artificial neural networks for acquiring knowledge from various sensor data. The discussion consists of two parts. The first part covers linear/nonlinear methods of least squares for extracting robot kinematic parameters from high-precision laser sensor data associated with a lower-pair kinematic chain. The second part deals with the use of discrete Fourier transform and artificial neural networks for acquiring the process dynamics and its characteristics from force feedback sensor data captured during a friction stir welding process.

Speaker Biography

Enkhsaikhan Boldsaikhan received his B.S. degree in Computer Science from Mongolian University of Science and Technology, in Ulaanbaatar, Mongolia. He earned his M.S. degree in Computer Science and the Ph.D. degree in Materials Engineering and Science from South Dakota School of Mines and Technology, in Rapid City, SD, USA. He was a research scientist/engineer at National Institute for Aviation Research. He is now an assistant professor in the Department of Industrial, Systems, and Manufacturing Engineering at Wichita State University. His research interests include smart manufacturing, automation, industrial robotics, friction stir welding, and cyber-physical systems. He teaches industrial robotics and automation courses.