Control Systems Approach to Health Monitoring, Diagnostics, Maintenance of Dynamic Systems

Monday, January 30, 2012 | 10:00 am | DeWALT Seminar Room, 2164 Martin Hall

ABSTRACT: Despite its success to date, system dynamics and control theory has yet to make significant contributions in monitoring, diagnostics and maintenance of dynamic systems and processes. Especially, model-based system ID via multi-sensor fusion can offer unique perspectives to address many outstanding challenges in a wide range of dynamic systems. This presentation demonstrates how system dynamics and control engineering can resolve some of condition monitoring, diagnostics and maintenance challenges in emerging dynamic systems – 1) health monitoring, disease prediction/diagnostics, and treatment/therapy in biomedicine, 2) fault diagnostics/accommodation and human-in-the-loop control in automotive systems, and 3) equipment condition monitoring and maintenance in energy systems. Significance and state-of-the-art, recent activity and future prospects will be discussed for each of the problems.

BIO: Dr. Jin-Oh Hahn received his BS and MS degrees in Mechanical Design and Production Engineering from Seoul National University in 1997 and 1999, and completed his PhD degree in Mechanical Engineering at Massachusetts Institute of Technology in 2008. He is currently an Assistant Professor in the Department of Mechanical Engineering at the University of Alberta. Prof. Hahn’s research interest is system dynamics and control with applications to condition monitoring, diagnostics and maintenance of a range of dynamic systems, including biomedicine, automotive systems and energy systems. Prof. Hahn is a winner of Gold Prize at the Samsung Human-Tech Thesis Award in 2008.

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