

THE DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING SPEAKER SERIES

PRESENTS

Model-Based Development and Evaluation of Physiological Monitoring and Closed-Loop Control Systems



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LECTURE ABSTRACT

Despite its success to date, dynamical systems and control theory has yet to make significant contributions in medicine, in the context of physiological monitoring and closed-loop control. Mathematical modeling and analysis as well as system identification and control may potentially enhance mechanistic understanding and insight of physiological systems and process, thereby enabling systematic development of physiological monitoring and closed-loop control capabilities. This talk intends to illustrate how dynamical systems and control principles can be leveraged to solve closed-loop autonomy challenges in medicine and healthcare, including blood pressure and cardiovascular health monitoring as well as autonomous closed-loop critical care. For these real-world problems, significance and state-of-the-art, model-based development approaches, and future prospect will be discussed.

SPEAKER BIOSKETCH

Dr. Jin-Oh Hahn received BS and MS degrees in mechanical engineering from Seoul National University in 1997 and 1999, and PhD degree in mechanical engineering from Massachusetts Institute of Technology (MIT) in 2008. He is currently with the University of Maryland, where he is an Associate Professor in the Department of Mechanical Engineering and a Faculty Affiliate in the Applied Mathematics, Statistics, and Scientific Computation (AMSC) Program. Dr. Hahn is a recipient of the Faculty early Career Development (CARRER) Award from the National Science Foundation in 2018, the Best Bio-Systems and Healthcare Paper Award from the Bio-Systems and Healthcare Technical Committee in the Dynamic Systems and Control Division of ASME, the Young Investigator Program Award from the Office of Naval Research in 2014, and the Young Investigator Grant Award from the Korean-American Scientists and Engineers Association in 2013. His current research interests include applications of dynamical systems and control theory to health monitoring, fault diagnostics, maintenance and treatment of dynamical systems with emphasis on health and medicine.

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