

서 울 대 학 교 산업혁신 애널리틱스 교육연구단

BK21 FOUR SEMINAR

2024.07.04.(목) 14:00~15:00		
2024.07.04.(7) 14.00 15.00	장 소	서울대학교 39동 321호
Young-Jun Son (손영준) / James J. Solberg Head and Ransburg Professor / School of Industrial Engineering, Purdue University		
Dr. Young-Jun Son is the James J. Solberg Head and Ransburg Professor of School of Industrial Engineering at Purdue University. He is a Department Editor of the Institute of Industrial and Systems Engineers (IISE) Transactions, and serve on the editorial board for six other international journals. He is a Fellow of Institute of Industrial and Systems Engineers (IISE), and has received the Society of Manufacturing Engineers (SME) 2004 Outstanding Young ME Award, the IIE 2005 Outstanding Young IE Award, the IISE Annual Meeting Best Paper Awards (2005, 2008, 2009, 2016, 2018, 2019), and the Best Paper of the Year Award (2007) in International Journal of Industrial Engineering.		
Multi-paradigm Simulation and Decision Models for Planning and Control of Complex Systems		
In this talk, we will discuss multi-paradigm simulations to support planning and control decisions. First, we will discuss a simulation-based planning and control (SPC) approach, where a fast-running simulation is used to evaluate decision alternatives at the planning stage, and the same simulation model (running in real-time) is used as a task generator to drive a smart manufacturing system at the control stage. Second, we then discuss extension of SPC to a dynamic data driven adaptive multi-scale simulation (DDDAMS) framework for surveillance and crowd control via unmanned aerial vehicles (UAVs) and unmanned ground vehicles (UGVs). The DDDAMS framework is composed of integrated planner, integrated controller, and decision module for DDDAMS. The integrated planner, employing agent-based simulation (ABS) and physics-based game simulation, devises best control strategies for 1) crowd detection, 2) crowd tracking, and 3) UAV/UGV motion planning. The integrated controller then controls real UAVs/UGVs via 1) sensory data collection and processing, 2) control command generation based on strategies provided by the decision planner, and 3) control command transmission to the real system. The decision module for DDDAMS enhances computational efficiency via dynamic switching of fidelity of simulation and information gathering. Finally, we will share the results of our field demo, which integrated a fast running simulator, a real-time simulator, and the real system (UAVs, UGVs, and crowd).		
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	School of Industrial Engineering, Pure Young-Jun Son is the James J. So Industrial Engineering at Purdue University of Industrial Engineering at Purdue University of Industrial and Systems Engineers board for six other international journ Systems Engineers (IISE), and has respond to the Industrial Engineering (ISE), and has respond to the Industrial Engineering. Multi-paradigm Simulation and Decision Systems In this talk, we will discuss multi-paradigm Simulation and Decision Systems In this talk, we will discuss multi-paradigm Simulation and the same simulation decisions. First, we will discuss approach, where a fast-running simulation the planning stage, and the same simulated the planning stage, and the same simulation (DDDAMS) framework for a serial vehicles (UAVs) and unmanuforamework is composed of integrated and physics-based game simulation, detection, 2) crowd tracking, and is controller then controls real UAVs/UGV (2) control command generation based and 3) control command transmission DDDAMS enhances computational estimulation and information gathering demo, which integrated a fast running system (UAVs, UGVs, and crowd).	Dr. Young-Jun Son is the James J. Solberg He Industrial Engineering at Purdue University. He for Industrial Engineering at Purdue University. He for Industrial and Systems Engineers (IISE) To board for six other international journals. He Systems Engineers (IISE), and has received (SME) 2004 Outstanding Young ME Award, the IISE Annual Meeting Best Paper of Award, the IISE Annual Meeting Best Paper of Industrial Engineering. Multi-paradigm Simulation and Decision Mode Systems In this talk, we will discuss multi-paradigm control decisions. First, we will discuss a simulation decisions. First, we will discuss a simulation task generator to drive a smart manufacturing we then discuss extension of SPC to a dissimulation (DDDAMS) framework for surveill agerial vehicles (UAVs) and unmanned gramework is composed of integrated planmodule for DDDAMS. The integrated planner, and physics-based game simulation, devises detection, 2) crowd tracking, and 3) UAV controller then controls real UAVs/UGVs via 1 (2) control command generation based on strain and 3) control command transmission to the DDDAMS enhances computational efficiency simulation and information gathering. Finally demo, which integrated a fast running simulations system (UAVs, UGVs, and crowd).