神戸未来医療構想セミナー

Physiological Digital Twin for Connected Healthcare

Speaker: Jun Ueda, PhD,

Professor, Georgia Institute of Technology

9.9 月

18:00~19:20

会場

楠キャンパス
福利厚生棟4階
ホール A
[zoom併用]

Abstract

This talk will present the development of personalized mathematical models for motor control and healthcare device research, which are designed to simulate and predict an individual' s various physiological responses. In healthcare, digital twin technology-initially introduced in industrial manufacturing-has become a revolutionary approach for individualized patient modeling. Physiological digital twins are crucial for advancing tailored interventions and enabling early, personalized responses to healthcare needs. Key to the potential transformation of healthcare by these digital twins are achievements in multi- modal sensing, patient- specific modeling, and implementation including privacy preservation. Dynamic system identification methods must be carefully applied when using mechanical platforms to induce perturbations for human physiological system modeling due to physical interaction. This talk will address the challenges and opportunities in designing these perturbations and in identifying key dynamic parameters, with examples from gait analysis, neurological facilitation exercises, and magnetic resonance elastography (MRE). The crucial integration of advanced motion control with compliant robotics highlights the need for interdisciplinary collaboration in the fields of medicine and related areas.

Speaker Bio:

Jun Ueda, PhD, Professor, Georgia Institute of Technology

Dr. Jun Ueda is a Professor in the G. W. Woodruff School of Mechanical Engineering at the Georgia Institute of Technology. He received his B.S., M.S., and Ph.D. degrees in Mechanical Engineering from Kyoto University, Kyoto, Japan, in 1994 , 1996 , and 2002 , respectively. From 1996 to 2000 , he was a Research Engineer at the Advanced Technology Research and Development Center of Mitsubishi Electric Corporation in Japan. He served as an Assistant Professor at the Nara Institute of Science and Technology, Japan, from 2002 to 2008 . From 2005 to 2008 , he was also a visiting scholar and lecturer in the Department of Mechanical Engineering at the Massachusetts Institute of Technology. He joined the faculty at the Georgia Institute of Technology as an Assistant Professor in 2008 and was the Director of the Robotics Ph.D. Program at Georgia Tech from 2015 to 2017 . Dr. Ueda is currently a Senior Editor for the IEEE/ ASME Transactions on Mechatronics. His recognitions include the Fanuc FA Robot Foundation Best Paper Award in 2005 , the IEEE Robotics and Automation Society Early Academic Career Award in 2009, the Advanced Robotics Best Paper Award in 2015, and the Nagamori Award in 2021.

ハイブリッド開催のセミナーです。(スライド: 英語/ 説明: 日本語)

参加申し込みはこちらから https://forms.gle/o9dyC48N5ermPkDw5 〆切9/9(月)正午

主催: 未来医工学研究開発センター
医学研究科医療創成工学専攻

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