## Scientific Conference & DGR Days



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## **Personal Digital-Twin and Data Science**

Wednesday, October 6, 2021 10:00 AM (1 hour)

Computer vision, AI and robotics extend and deepen the basic research about the human by motion measurements, motion analysis, biomechanical analysis, motion semiotics, and their data science. In 2020 we started Corporate Sponsored Research Program "Human-Motion Data Science" as a three-year research program in University of Tokyo supported by the five industrial partners. Informatics on the body and motion of humans enlightens a unique scientific domain, but yet remains unsystematized and is not fully developed. We study human-motion data science research toward social implementation into sports training, rehabilitation, health monitoring, and so on. The uniqueness of our approach is based on the computational algorithms and system designs originated in robotics. 3D pose and motion reconstruction from computer vision, biomechanical analysis of wholebody motion, and semantic interpretation of motion are all based on our original robotics studies of kinematics, dynamics, statistics, and high dimensional optimization. This talk will discuss monitoring the change of body functions and skills by accumulating personal body and motion data as the personal digital-twin, and on the horizon of its data science. <br/>

<h1>Bio</h1>

<img src="https://indico.kit.edu/event/2389/images/1441-Portrait<br/> $_Nakamura.jpg$ "alt = "PortraitNakamura" >

<strong>Yoshihiko Nakamura</strong> is Senior Researcher with Corporate Sponsored Research Program "Human Motion Data Science", Research into Artifacts Center for Engineering, Graduate School of Engineering, University of Tokyo. He received PhD in 1985 from Kyoto University and held faculty positions in Kyoto University, University of California Santa Barbara and University of Tokyo. His fields of research include humanoid robotics, cognitive robotics, neuromusculoskeletal human model, and human-motion data science. He is a recipient of King-Sun Fu Memorial Best Transactions Paper Award, IEEE Transaction of Robotics and Automation in 2001 and 2002 and of Pioneer Award of IEEE-RAS in 2021. He was President of IFToMM (International Federation for the Promotion of Mechanisms and Machine Science) in 2011-2015. Dr. Nakamura is Foreign Member of Academy of Engineering Science of Serbia, TUM Distinguished Affiliated Professor of Technische Universität München, Fellow of JSME, RSJ, and World Academy of Art and Science, Life Fellow of IEEE, and Professor Emeritus of University of Tokyo.

www.roboticsynl.com/hmds/

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