Graduate School of Information Science, University of Hyogo

25th International Research Seminar

LEVERAGING AI AND UNCERTAINTY ESTIMATION IN LARGE-SCALE DATABASES OF MEDICAL IMAGES FOR COMPUTATIONAL MUSCLE MODELING AND QUALITY ASSESSMENT

Thu. 12 Nov. 2026 (13:00 ~ 14:00) JST

IN-PERSON/ONLINE SEMINAR

In this seminar, we explore cutting-edge applications of Artificial Intelligence (AI) in medical image-based advanced muscle analysis. We will introduce novel deep-learning methods that achieve highly accurate segmentation of muscle groups from CT and MRI modalities. These segmented regions serve as the foundation for detailed quantitative assessments of muscle quality, thereby revealing key indicators of sarcopenia and musculoskeletal changes, such as atrophy, fatty infiltration, and density variations. Furthermore, as medical imaging archives grow in clinical institutions, they present invaluable opportunities to discover broader associations between demographic factors and muscle health. To address data reliability across large datasets, we will discuss uncertainty estimation as a tool for automated quality control in big data processing and its potential for revealing muscle health tendencies in the population level. Finally, we will demonstrate how 3D shape and spatial distribution analysis of fatty infiltration offer significant potential for clinical monitoring, aging research, and personalized rehabilitation.

Guest Speaker



Mazen Soufi

Specially Appointed Assistant Professor,
Faculty of Engineering,
University of Miyazaki, Japan

Mazen Soufi is currently a Specially Appointed Assistant Professor in the Faculty of Engineering at the University of Miyazaki, a Visiting Assistant Professor at Nara Institute of Science and Technology, and a Senior Researcher at MICBON. His research interests lie in medical image analysis, artificial intelligence, and medical informatics, with a particular focus on musculoskeletal imaging and disease progression modeling. He is a member of IEEE, the World Muscle Society (WMS), and five Japanese academic societies related to computer-assisted image sciences. He also serves as an executive committee member of the Japanese Society of Medical Imaging and Information Sciences. In addition, he serves as a reviewer for international journals and conferences, including MICCAI, JMI, and IJCARS. He was awarded the CAS Young Investigator Award (Silver Award) at the 33rd Annual Congress of the Japan Society of Computer Aided Surgery (JSCAS) for his work on AI-driven musculoskeletal image analysis.

Register here (free)

https://shorturl.at/VqbuM

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https://www.u-hyogo.ac.jp/about/access/

For more details:

https://mazensoufi.github.io/