Title:

AI for Medical Image Analysis

Abstract:

Deep learning technologies for image processing have been widely studied to detect objects, restore image quality, etc. As the models with high performance typically require large amounts of labeled data and in particular, labeling medical images is difficult to obtain and time-consuming, semi-supervised or unsupervised learning-based methods have been largely developed recently. In this seminar, I will introduce several deep learning-based methods for medical image analysis that I developed. First, I will present a label-free blood vessel segmentation method through semi-supervised and contrastive learning. Second, I will present an unsupervised learning-based image registration method for multi-domain images such as CT and MRI. Third, I will present a multi-parametric MRI series classification model, which can be used as a foundation model for the other datasets. These learning-based methods would provide desired outputs in real time and can be useful in clinical practice.