Redefining MRI:
From Image to Insight

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Meet the New Experts

SY16-4

Deep Learning for Medical Image Analysis

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Deep learning has significantly advanced medical image analysis, enabling automated interpretation and quantitative assessment of complex clinical data. However, developing robust AI models remains challenging due to the limited availability of large-scale annotated medical datasets and the heterogeneity of medical imaging data. In this seminar, I will introduce several deep learning-based methods for medical image analysis that I have recently developed. These include a multi-parametric MRI series classification model for downstream clinical applications, deep learning-based image registration methods for both CT–MRI and multi-parametric MRI, and a large language model (LLM)-based framework for longitudinal radiology report analysis and follow-up tracking. I will also present our ongoing research on multi-modal medical AI, which leverages complementary information from multiple imaging modalities, such as CT and MRI, to improve medical image segmentation. Together, these studies demonstrate the potential of deep learning and multi-modal AI to advance medical image analysis and support a wide range of clinical applications.

Keywords: *Deep learning, Classification, Registration, Segmentation, LLM, Multi-modal AI*