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Acquisition & Analysis

SY17-3

AI-Based MRI Reconstruction

Tae Hyung Kim

Hongik University, Korea

Artificial intelligence (AI) has revolutionized the field of MRI reconstruction by enabling faster acquisitions, enhanced image quality, and robust artifact reduction. Recent deep learning approaches have demonstrated significant improvements over traditional techniques such as parallel imaging and compressed sensing. These approaches can effectively learn mappings from under-sampled or noisy data to high-fidelity images, supporting supervised, self-supervised, and even zero-shot training paradigms. Furthermore, AI-driven methods allow for adaptive and patient-specific scan protocols, noise suppression, and automated artifact correction, ultimately improving diagnostic accuracy and clinical workflow efficiency. This session will provide an overview of the latest methodological advances and practical applications of AI-based MRI reconstruction, focusing on ongoing challenges, evaluation metrics, and future perspectives for clinical translation.

Keywords: *Artificial intelligence, Deep learning, MRI (Magnetic Resonance Imaging), Image reconstruction, Denoising, Artifact reduction*