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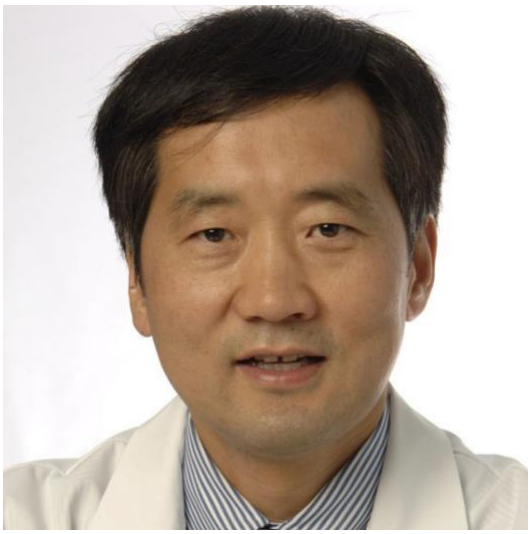

"Probing Tissue Heterogeneity Using Diffusion MRI"

Abstract:

Biological tissues are heterogeneous, particularly at a microscopic scale (e.g., ~10 micrometers). The degree of heterogeneity plays a very important role in tissue characterization, disease diagnosis, and treatment evaluation. In cancer, for example, intra-tumoral heterogeneity has been identified as one of the most important factors in disease staging and treatment planning. MRI-based tissue heterogeneity studies have been traditionally limited to inter-voxel assessment. Recent development in diffusion MRI has shown great potential of extending tissue heterogeneity assessment to an intra-voxel level. This seminar will highlight advanced diffusion MRI techniques our group has been developing to probe tissue heterogeneity; present the theory, implementation, and validation of these techniques; and demonstrate their clinical applications in cancer and other diseases.