Introduction to Image Science

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Abstract

Advances in medical imaging systems have made significant contributions to medical diagnoses and treatments by providing anatomic and functional information about human bodies that is difficult to obtain without these techniques. These modalities also generate large quantities of noisy data that need modern techniques of computational statistics for image reconstruction, visualization and analysis. This talk will discuss recent research in this area and suggest challenges that will need to be addressed by future studies. Specifically, I will discuss computational statistics for positron emission tomography, ultrasound images and magnetic resonance images from the perspectives of image reconstruction, image segmentation and vision model-based image analysis.