
Joint Statistics Seminar

The Hong Kong University of Science and Technology

Spatial Isotropy-Anisotropy Tests for Detecting White Matter Regions Based on Diffusion-Tensor MRI

by

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Date: February 18, 2009 (Wednesday)

Time: 3:00 p.m. - 4:15 p.m.

Venue: Room 4379 (Conference Room, Lift 17/18)

Abstract

Diffusion Tensor Magnetic Resonance Imaging (DT-MRI) provides promising information about the anatomical structure in human brain. One important and widely studied topic is how to identify white matter regions, which play important roles in diagnosing neuro-diseases, analyzing brain anatomical structures and so on.

In this talk, I will first introduce a procedure of constructing statistical scalars for each voxel of the whole brain based on DT-MRI data. Under mild regularity conditions, the constructed scalars can be demonstrated asymptotically following a χ^2 distribution, which provides us clear calibrate criteria for identifying white matter regions in human brain. Furthermore, because of the large testing number and the spatial structure, we propose a spatial false discovery rate (FDR) controlling procedure.

Simulation studies and real-data applications on the DT-MRI data are provided to illustrate the performance of the proposed methods.

❖ *All interested are welcome!* ❖

For details, please contact ISOM Department.