



10th Image Analysis Group Meeting

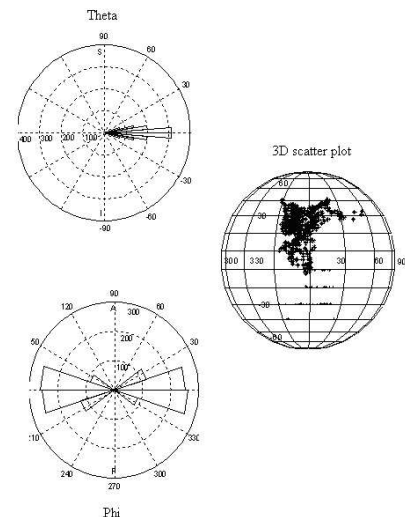
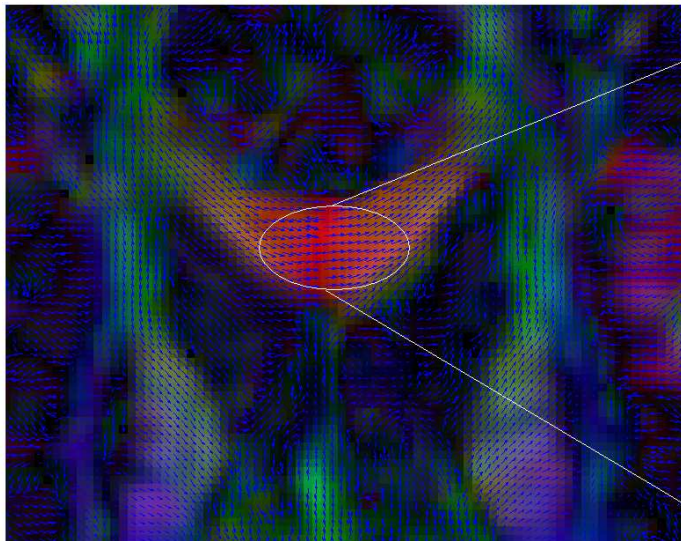
Friday March 26, 2004 at 3:00pm in CS&S 4310

Quantitative Analysis of Diffusion Tensor Orientation: Theoretical Framework

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Diffusion-tensor MRI (DT-MRI) yields information about the magnitude, anisotropy and orientation of water diffusion of brain tissues. Although white matter tractography and eigenvector color maps provide visually appealing displays of white matter tract organization, they do not easily lend themselves to quantitative and statistical analysis. In this study, a set of visual and quantitative tools for the investigation of tensor orientations in the human brain was developed. Visual tools included rose diagrams, which are spherical coordinate histograms of the major eigenvector directions, and 3D scatter plots of the major eigenvector angles. A scatter matrix of major eigenvector directions was used to describe the distribution of major eigenvectors in a defined anatomic region. A measure of eigenvector dispersion was developed to describe the degree of eigenvector coherence in the selected region. This novel approach distills the rich, 3D information available from the diffusion tensor into a form that lends itself to quantitative analysis.

Everyone is welcome. If you like to give a talk or be on the mailing list, please send email to Moo Chung mchung@stat.wisc.edu.