

Computer Science Seminar Series, 2011

National Capital Region

Diffusion Tensor Magnetic Resonance Imaging (DT-MRI) – Robust Diffusion Tensor Estimation by Outlier Rejection

Speaker: Prof. Lin-Ching Chang
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Friday, Nov. 18, 2011
1:00PM-2:00PM, NVC 325

Abstract

The presentation will begin by talking about the background and basic concepts underlying diffusion tensor magnetic resonance imaging (DT-MRI). Having explained the basic principle, we will then consider how the diffusion tensor is actually estimated from data, what quantitative parameters can be extracted from the tensor, and how the tensor derived quantities can be used in clinical research and applications. The NIH pediatric neuroimaging project (<http://www.bic.mni.mcgill.ca/nihpd/info/index.html>) will be used as an example to demonstrate how DTI can be used to study normal human brain development. The presentation will pose several problems in DTI processing and analysis, particularly how the artifacts can affect the tensor estimation. Enlightened solutions will be also presented in detail when dealing with artifacts in DTI.

Biography

Lin-Ching Chang is an Assistant Professor of Electrical Engineering and Computer Science at the Catholic University of America. She received her Ph.D. degree from The George Washington University in 1998. Her research over the past eight years is emphasized in processing and analysis of magnetic resonance imaging (MRI). During her career at the National Institutes of Health (NIH), she was working on quantitative image analysis of diffusion tensor magnetic resonance imaging (DT-MRI) data for human brain development. Prior to joining NIH, she has worked at 3Com Corporation, where she joined and led a number of commercial software projects in telecommunication. Her research interests include software development in medical image analysis, pattern recognition, combinatorial design, information retrieval, and telecommunication applications.