Some Mathematical Models in Biomedical Shape Processing and Analysis

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Date: 19 August 2010 (Thursday)
Time: 3.00 pm – 4.00 pm
Venue: MAS Executive Classroom 1, MAS-03-06
School of Physical and Mathematical Sciences

I will first discuss a tight frame based segmentation model for general medical image segmentation problems. This model is motivated by the ideas of the total variation based segmentation models (convexified Chan-Vese Model). Then I will move to the topic on biological shape processing and analysis, which is a rather popular topic lately in biomedical image analysis. Within this category, I will mainly discuss the following three topics: surface restoration via nonlocal means; brain aneurysm segmentation in 3D biomedical images; and multiscale representation for shapes and its applications in blood vessel recovery (surface inpainting) and others. Some future work and ongoing projects will be mentioned in the end.

Speaker Biography

Dr. Bin Dong is a S.E.W. Assistant Professor of the Department of Mathematics at University of California, San Diego. He received his B.S. in Mathematics from Peking University, M.Sc. in Mathematics from National University of Singapore, and Ph.D in Mathematics from University of California, Los Angeles. His research interest is in wavelet frames, level set method, variational models and their applications in medical imaging, image processing and analysis.

Host: Prof Tai Xue-Cheng, Division of Mathematical Sciences, School of Physical and Mathematical Sciences