Spline and wavelets for biomedical image analysis

Abstract

In this talk, I will first review my research work on spline and wavelet based signal processing theory and algorithms and then present their applications to two biomedical imaging modalities, i.e., tagged MRI image analysis and genomic imaging. In the first application, spline approximations are used to rapid and accurate computation of displacement field from tagged MRI image sequences for heart disease diagnosis. In the second application, I will show examples of wavelets to solve a variety genomic imaging problems such as chromosome image enhancement, debluring, registration and classification.

Biography: Yu-Ping Wang is an Assistant Professor of EE and CS at the University of Missouri-Kansas City (UMKC). He got his Bachelor and Master degrees in Applied and Computational Mathematics, and PhD in Communication and Electronic Systems from Tianjin University and Xi’an Jiaotong University respectively. From 1996 to 1998 he was a research fellow at the Center for Wavelets, Approximation and Information Processing at the National University of Singapore (NUS). He then had research training on tagged MRI image analysis at Washington University Medical School in St. Louis in 1999. From 2000 to 2003, he worked at Advanced Digital Imaging Research (ADIR) and Perceptive Scientific Instruments Inc. where he has involved with a variety of bio-imaging projects under the NIH Small Business Innovation Research (SBIR) program support. His current research focuses on genetic imaging, genomic signal processing, wavelets and applications to various biomedical imaging problems. Details about his research can be found at http://www.csee.umkc.edu/~wangyup/