

学术报告会

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Connecting microscopic structures and macroscopic measurements of the myocardium using realistic simulation of diffusion tensor imaging (DTI)



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Abstract:

Diffusion magnetic resonance imaging (dMRI) plays a fundamental and important role both in routine clinical practice and in fundamental research. In particular, diffusion tensor imaging (DTI), a particular sequence of dMRI, plays an invaluable role in the study of fiber structures of the human brain or heart. This talk presents some of our work on the investigation of the relationship between microscopic myocardial structures and macroscopic measurements from DTI. First, some context is presented, followed by the brief introduction of DTI principle. Our focus is then on realistic simulation of cardiac DTI and on the Inference of cardiac fiber microstructure from macroscopic DTI measurements. Finally, some conclusions and perspectives are given, in particular on the possible use of deep learning for get insights into fiber microstructures of the human heart.

Biography:

Prof. Yuemin ZHU is Research Director of the CNRS (Centre National de la Recherche Scientifique) of France at INSA (Institut National des Sciences Appliquées) Lyon. He carried out a broad spectrum of research activities, from the development of basic signal and image processing methods to their application to industrial nondestructive inspection and medical imaging. He published over 360 papers on image processing and medical imaging, including 168 papers in peered international journals. He was the recipient of French “Knight of the Order of Academic Palms” award in 2016. He served on editorial boards of several international journals such as Sensors, IEEE Access, Concepts in Magnetic Resonance Part B, and Journal of Medical Engineering.