Advanced MRI Techniques for Analyzing Cardiac Function

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Abstract

Different magnetic resonance imaging (MRI) techniques have been developed over the past 25 years for measuring heart mechanics and assessing regional cardiac function. These techniques include cine, tagging, and different magnitude- and phase-based motion-encoding techniques. Together with recent advances in techniques for revealing the myocardial structure-function relationship and its intrinsic mechanical properties, these advances provide different types of images that need special postprocessing and analysis algorithms to efficiently extract accurate and meaningful information about the heart function. This presentation provides an overview of different technical developments in the field as well as key clinical applications.

Bio

Dr. El-Sayed H. Ibrahim received the Master and Doctorate degrees in Computer Engineering from the Johns Hopkins University, under a joint program between the Electrical Engineering and Radiology Departments. After graduation, he joined the University of Florida, Department of Radiology as an Assistant Professor for five years. Dr. Ibrahim then moved to Mayo Clinic for a couple of years before joining the University of Michigan. Dr. Ibrahim's research interests include medical imaging and image processing with special emphasis on magnetic resonance imaging and cardiovascular applications. Dr. Ibrahim is the author of Heart mechanics. Magnetic resonance imaging, a key 2-volume book in cardiovascular imaging. He has many publications, including books, book chapters, book reviews, journal papers, proceeding papers, and conference abstracts. Dr. Ibrahim is a reviewer for 25 international journals, conferences, and grants funding agencies. Dr. Ibrahim received many awards and nominations for distinguished accomplishments, as well as research funding grants for different projects on medical imaging.