1086-92-2984 **Piotr Slomka*** (piotr.slomka@cshs.org), Dept. of Imaging, Cedars-Sinai Medical Center, 8700 Beverly Blvd., Los Angeles, CA 90048. *Computational image analysis methods for modern cardiac imaging data.*

Cardiac imaging is an indispensable tool in detecting and monitoring coronary heart disease. Computed Tomography (CT), Magnetic Resonance Imaging (MRI), nuclear imaging (PET and SPECT), and hybrid techniques can produce large amounts of data. Such anatomical images can be combined with additional physiologic data, overlaying detailed physiological information about the heart both in 3D and 4D. Cardiac imaging technologies present physicians with unprecedented amounts of data and make it difficult to perform accurate visual analysis. Recent automated techniques in nuclear cardiology imaging have shown promise to outperform even experienced clinicians in detecting the disease. Therefore new computational paradigms have to significantly enhance the value of these complex medical tests. We aim to review various software approaches applied to analysis of cardiac data for the following computational problems: 3D & 4D segmentation of the heart, automatic extraction of coronary vessels, automatic detection of lesions likely to cause a heart attack, detection and correction of 3D physiological patient and organ motion during high-resolution scans, and optimal diagnosis by a combination of several imaging features and additional patient information by machine learning methods. (Received September 26, 2012)