

Automatic calculation of the ejection fraction of the right ventricle from cine MRI.

Description:

The ejection fraction of the right and the left ventricle of the heart is an important parameter for detection of different myocardial diseases. The ejection fraction of the right ventricle is an important indicator for various diseases like dysplasia, cardiomyopathy and pulmonary artery diseases. In recent years different imaging modalities like echocardiography, xray (CT or contrast ventriculography) and scintigraphy are used for studying the heart. Magnetic Resonance Imaging (MRI) is another imaging modality that is well suited for the study of heart. MRI has high spatial and temporal resolutions. Single examination reveals high resolution image of the right and the left ventricle. Thick and well defined wall of the left ventricle makes modelling of the left ventricle easy. This helps in proper computation of the ejection fraction of the left ventricle. However, the complicated shape and the translational movement of the right ventricle make it difficult to model, making the computation of the volume of the cavity in systole and diastole phase of the heart and computation of the ejection fraction difficult. With high number of cardio vascular patients in the society manual tracing is becoming increasingly difficult. The objective of this thesis is to model the right ventricle and computation of the volume and ejection fraction of the right ventricle from cine MRI.