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AI-based Evaluation of cardiac real-time MRI with congenital heart disease

Cardiac MRI is an important diagnostic tool in heart diseases for assessment of vital parameters. Current methods are limited to patients with regular heart beats and breath hold capability. New teal-time MRI allows the recording of 2D slices of the pumping human heart during spontaneous breathing. Such high frame rates yield large amounts of data at different breath and cardiac phase. We introduce the key challenges in automated evaluations of this data especially in congenital heart diseases. These evaluations can be used to investigate the effect of respiration on parameters such as blood flow and stroke volume. The heart is acquired slice by slice, thus the cardiac cycles have to be synchronized to model a 3D heart model for in-phase value estimations. Another challenge is the anatomical segmentation. We present our workflow to tackle those challenges, show and discuss first results. One result is a breath- and cardiac cycle synchronized segmented univentricular heart in 4D.

I want to give an oral presentation.

yes

I want to present a poster.

yes

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