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Compressed Sensing Coronary MRI Sequence

Higher Acceleration Rates than Parallel Imaging

A novel MRI (Magnetic Resonance Imaging) imaging sequence and reconstruction method uses a randomly undersampled acquisition of a 3D k-space to allow a compressed sensing accelerated coronary MRI sequence. Compressed sensing allows for acceleration rates higher than parallel imaging.

Coronary MRI still faces major challenges, including lengthy acquisition time, low signal-to-noise-ratio (SNR), and suboptimal spatial resolution. Higher spatial resolution in the sub-millimeter (sub-mm) range is desirable, but this results in increased acquisition time and lower SNR, hindering its clinical implementation.

Phase of Development

- Prototype developed. Demonstrated across multiple in vivo studies.

Features

- Compressed sensing accelerated coronary MRI sequence
- Randomly undersampled acquisition of a 3D k-space
- Higher acceleration rates than parallel imaging
- Improved signal-to-noise ratio

Applications

- Conventional MRI scanners
- Magnetic resonance imaging (MRI)

Technology ID

20170287

Category

Engineering & Physical Sciences/Instrumentation, Sensors & Controls
Life Sciences/Diagnostics & Imaging
Life Sciences/Medical Devices
Software & IT/Algorithms

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Researchers

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Publications

Accelerated isotropic sub millimeter whole heart coronary MRI: Compressed sensing versus parallel imaging
Magn Reson Med. , 2014 Feb; 71(2): 815–822
Accelerated coronary mri using compressed sensing with transform domain dependencies: a feasibility study
Journal of Cardiovascular Magnetic Resonance, 2010 12 (Suppl 1) :P36

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