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Deep Learning Method for Nonstationary Image Artifact Correction

Nonstationary image artifacts frequently arise in MRI from off-resonance and motion. Current methods to correct these nonstationary effects are computationally expensive. Stanford researchers have developed a new deep learning framework to improve image quality in minutes. This method allows radiologists to evaluate image quality while the patient is still in the scanner. This technique also allows for shorter scans by allowing for longer readouts and correcting the artifacts that may arise.

Applications

- Off-resonance correction
- Motion artifact correction
- Useful for brain, heart, pulmonary and renal imaging

Advantages

- Deep learning is computationally very fast to run and can process an entire 3D image in under a minute;
- Quick turnaround that provides radiologists with images in clinically relevant time. If an image turns out poorly, the patient will still be in the scanner and the radiologist can immediately repeat the scan.
- Better image quality
- Seamlessly integrates with clinical workflow.

Publications

- Zeng et al. Deep Learning Method for Non-Cartesian Off-resonance Artifact Correction Joint Annual Meeting of ISMRM-ESMRMB June 19, 2018.

Patents

- Published Application: 20190277935
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