



Image processing technique for improved MRI image fidelity

A novel technique to improve MRI image fidelity via the combination of a denoising and deep learning-based reconstruction step.

Technology No. 2022-104

IP Status: PCT Pending: Application #: PCT/US2022/052876

Applications

- Functional and structural imaging

Technology Overview

Functional magnetic resonance imaging (fMRI) is a powerful tool to safely measure and map brain activity. Though fMRI has revolutionized our understanding of the human brain, higher image quality is desirable to study brain function at the mesoscale level. In high-resolution imaging, there is a tradeoff between signal-to-noise ratio, spatial-temporal resolution, and coverage which can impact diagnostic capabilities. Researchers at the University of Minnesota have developed a novel technique for improving image fidelity in fMRI through an image processing pipeline comprising a denoising step and deep learning-based reconstruction step. This invention offers better denoising performance at higher speeds than competing techniques

Phase of Development

TRL: 4-5

Proof of concept demonstrated on 7T brain data.

Desired Partnerships

This technology is now available for:

- License
- Sponsored research
- Co-development

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Researchers

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References

Omer Burak Demirel, Steen Moeller, Luca Vizioli, Burhaneddin Yaman, Logan Dowdle, Essa Yacoub, Kamil Ugurbil, and Mehmet Akçakaya(2022),

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<https://license.umn.edu/product/image-processing-technique-for-improved-mri-image-fidelity>