



# DeepPTx: parallel transmission MRI using deep learning

**A novel deep neural network to enhance MRI image reconstruction.**

**IP Status:** US Patent Issued; Issued Patent No. 11,982,725

## Applications

- Generate full parallel transmit-like high-fidelity images using single transmit systems

## Technology Overview

Parallel transmit (pTx) is a powerful technique used to overcome the challenges of ultra-high field MRI while achieving the corresponding increase in signal-to-noise ratio (SNR). However, conventional pTx requires careful pulse design and tedious calibration thereby hindering clinical adoption. Researchers at the University of Minnesota have developed a novel deep-learning framework, deepPTx, which trains a deep neural network to directly predict pTx-like images from images obtained with single-channel transmit (sTx) systems. This method substantially enhances image quality relative to sTx approaches and does not require either pTx hardware or specialized pTx expertise in pulse design.

## Phase of Development

**TRL:4-5**

Demonstrated on Siemens 7T Terra MRI scanner for whole-brain diffusion MRI.

## Desired Partnerships

This technology is now available for:

- License
- Sponsored research
- Co-development

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## Researchers

- [Xiaoping Wu, PhD](#) Assistant Professor, Department of Radiology
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## References

1. Xiaodong Ma, Kâmil Uğurbil, Xiaoping Wu(April 2022) , <https://onlinelibrary.wiley.com/doi/full/10.1002/mrm.29238>, Magnetic Resonance in Medicine

## Technology ID

2021-153

## Category

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