# DEEP LEARNING TIME

# BUT HOW?

- Standard
- Unsupervised
- Semi-supervised

## Correction of Susceptibility Distortion in EPI: A Semi-supervised Approach with Deep Learning

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### Abstract

Echo planar imaging (EPI) is the most common approach for acquiring diffusion and functional MRI data due to its high temporal resolution. However, this comes at the cost of higher sensitivity to susceptibility-induced $B_0$ field inhomogeneities around air/tissue interfaces. This leads to severe geometric distortions along the phase encoding direction (PED). To correct this distortion, the standard approach involves an analogous acquisition using an opposite PED leading to images with inverted distortions and then non-linear image registration, with a transformation model constrained along the PED, to estimate the voxel-wise shift that undistorts the image pair and generates a distortion-free image. With