

**Supplementary Table 1: Summary of Learning-based Denoising Methods in
Low-Field MRI**

Training Classification	Ref	Method & Architecture	Acquisition Details
Supervised	Lin et al., 2019	3D Isotropic U-Net with bottleneck block	Training: HCP T1W Test: pediatric LF-MRI
	Hernandez et al., 2021	2D U-net Denoising Auto-Encoder (DAE), 2D U-Net-like	Pelvic data (1.5T + Rician noise); transferred to 0.35T MR-Linac
	MacDonald et al., 2022	DAE with 7-layer U-Net structure	Training: IXI 3T brain data; Test: Simulated 64mT LF
	Schote et al., 2024	Cascaded U-Net + physics-informed modules	Simulated knee (~50mT); joint Bo correction & denoising
	Zhao et al., 2024	Residual U-Net (Deep-DSP) for direct EMI-free signal prediction	Synthetic EMI data + 0.055T brain GRE; shielding-free portable MRI
	Koonjoo et al., 2021	AUTOMAP (FC + CNN layers), sensor-domain mapping	6.5mT & 47mT scanners; b-SSFP sequences; HCP-based synthetic data
	Jimeno et al., 2022	ArtifactID (binary CNN classifier) with Grad-CAM	IXI (1.5T/3T) + 0.36T MagSense 360 LF-MRI; wrap-around/Gibbs artifact detection
	Meng et al., 2023	Two-step cascaded network: Hankel-matrix SVD + CNN	Home-built 54 mT; T1/T2/FLAIR; transfer learning from 1.5T
	Hu et al., 2025	Dual-step DDA: 4-block Residual CNN + Triple-generator WGAN	0.11T shielding-free scanner; k-space EMI sensor→coil noise mapping
	Lu et al., 2025	3-layer CNN with SENet attention mechanism (se-CNN)	Home-built 50mT portable scanner; multi-coil EMI sensing

Training Classification	Ref	Method & Architecture	Acquisition Details
Self-supervised	Islam et al., 2023	3D cGAN with ResNet blocks (LoHiResGAN)	Paired 64mT (Hyperfine) ↔ 3T (Siemens Biograph) MRI
	Yoo et al., 2021	Cycle-GAN (unpaired translation)	Unpaired 64mT ↔ 1.5T GE Signa HDxt; deformable registration
	Vega et al., 2023	Cycle-GAN + DAE	OASIS-3 (3T T1W); simulated 70mT LF data with Rician noise
	Lin et al., 2024	Diffusion-driven neural representation (DiffDeuR): VE-SDE + INR	0.2T vs. 3T T1W; zero-shot, unsupervised enhancement
	Dayarathna et al., 2024	Adversarial diffusion module (U-Net + ResNet + GAN-based diffusion)	Paired 64mT ↔ 3T T1/T2/FLAIR; attention-guided refinement