— SUPPLEMENTARY MATERIAL —
IMPROVING 2D DIFFUSION MODELS FOR 3D MEDICAL IMAGING WITH INTER-SLICE CONSISTENT STOCHASTICITY

Anonymous authors
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Table R 1. Slice-to-slice difference of compared methods for three 3D medical imaging tasks: SVCT of 30 views, LACT of [0, 100]°, and MRI SR of 5×. $\text{SDiff}_{\text{recon}}$ and SDiff_{GT} denote the mean absolute difference between adjacent slices for the reconstruction and ground truth, respectively; $\Delta = \text{SDiff}_{\text{recon}} - \text{SDiff}_{\text{GT}}$ measures the signed gap, and $|\Delta|$ is its absolute value (smaller is better).

Task	Methods	Slice difference			
		$\text{SDiff}_{\text{recon}}$	SDiff_{GT}	Δ	$\lvert\Delta\rvert$
SVCT	FDK	0.011893	0.006309	0.005584	0.005584
	ADMM-TV	0.004692	0.006309	-0.001617	0.001617
	DDNM	0.015652	0.006309	0.009342	0.009342
	DDNM+ISCS	0.004524	0.006309	-0.001785	0.001785
	DDS	0.011897	0.006309	0.005588	0.005588
	DDS+TV	0.003372	0.006309	-0.002937	0.002937
	DDS+ISCS	0.004474	0.006309	-0.001835	0.001835
LACT	FDK	0.007208	0.006309	0.000898	0.000898
	ADMM-TV	0.005432	0.006309	-0.000877	0.000877
	DDNM	0.022753	0.006309	0.016443	0.016443
	DDNM+ISCS	0.004410	0.006309	-0.001899	0.001899
	DDS	0.017901	0.006309	0.011592	0.011592
	DDS+TV	0.003743	0.006309	-0.002566	0.002566
	DDS+ISCS	0.004344	0.006309	-0.001966	0.001966
MRI SR	Cubic	0.007766	0.011934	-0.004168	0.004168
	ADMM-TV	0.006861	0.011934	-0.005074	0.005074
	DDNM	0.013414	0.011934	0.001480	0.001480
	DDNM+ISCS	0.010021	0.011934	-0.001913	0.001913
	DDS	0.013787	0.011934	0.001853	0.001853
	DDS+TV	0.007202	0.011934	-0.004732	0.004732
	DDS+ISCS	0.009838	0.011934	-0.002096	0.002096

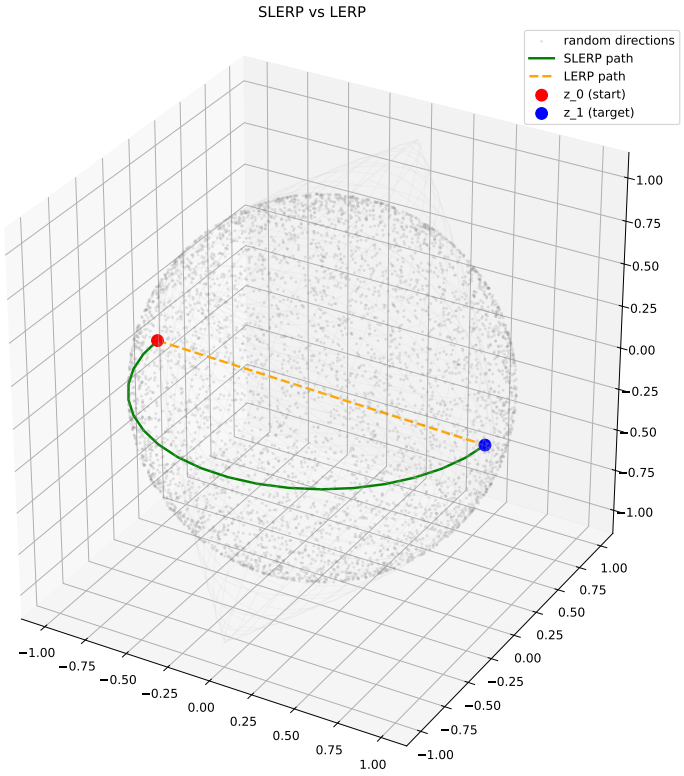

Figure R 1. Geometric interpretation of high-dimensional Gaussian noise and interpolation paths of SLERP and LERP.

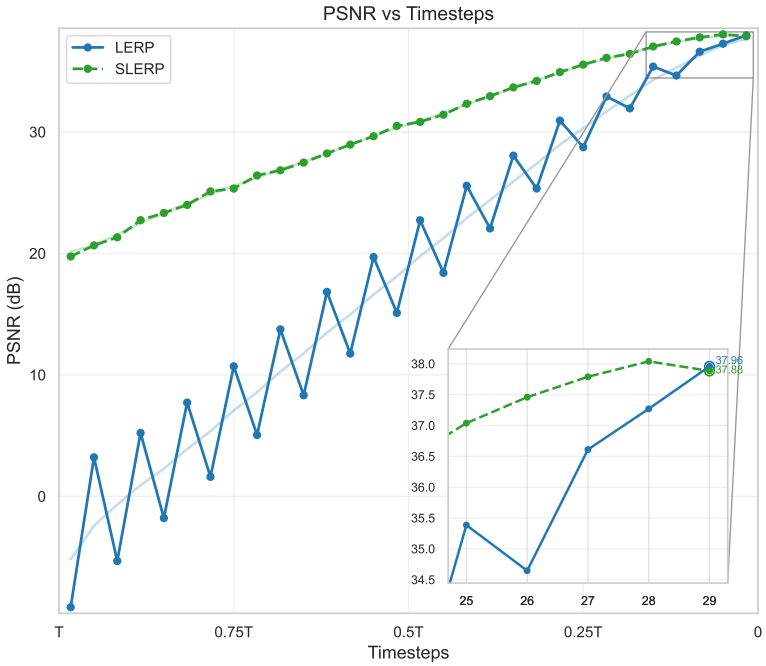

Figure R 2. Performance curves across the sampling process comparing LERP and SLERP as the inter-slice noise interpolation strategy in ISCS.

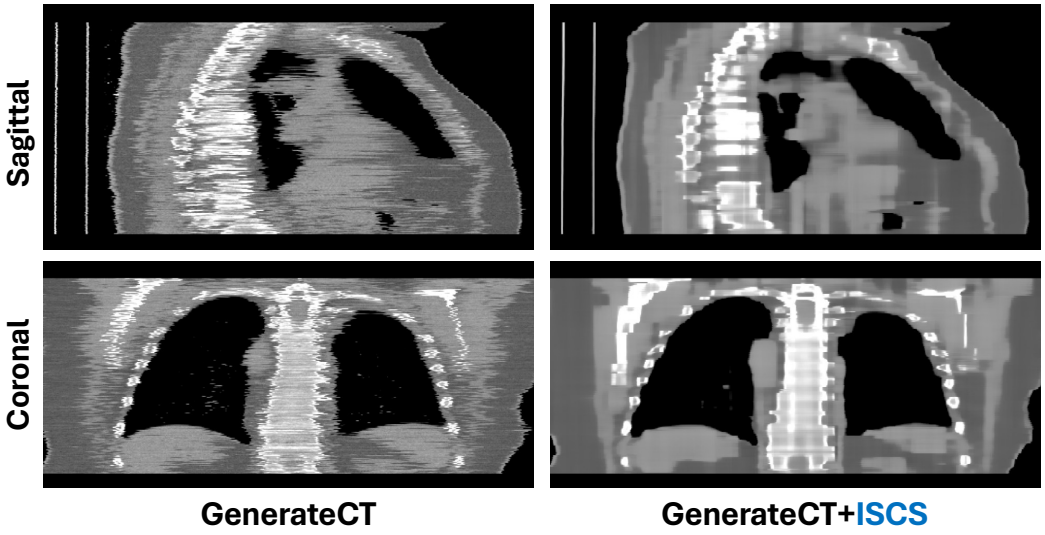

Figure R 3. Qualitative comparison of GenerateCT method with and without the proposed ISCS strategy.

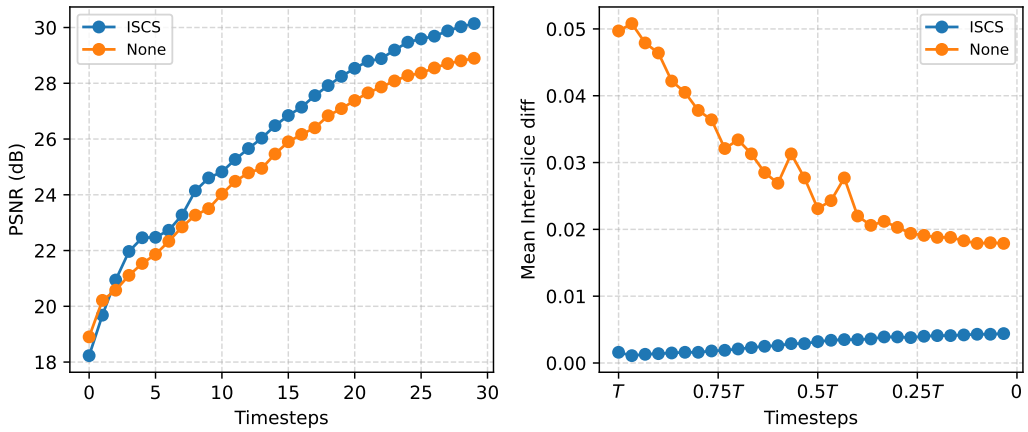

Figure R 4. Performance curves across the sampling proces of DDS with and without ISCS on LACT task of 0, 100]°.

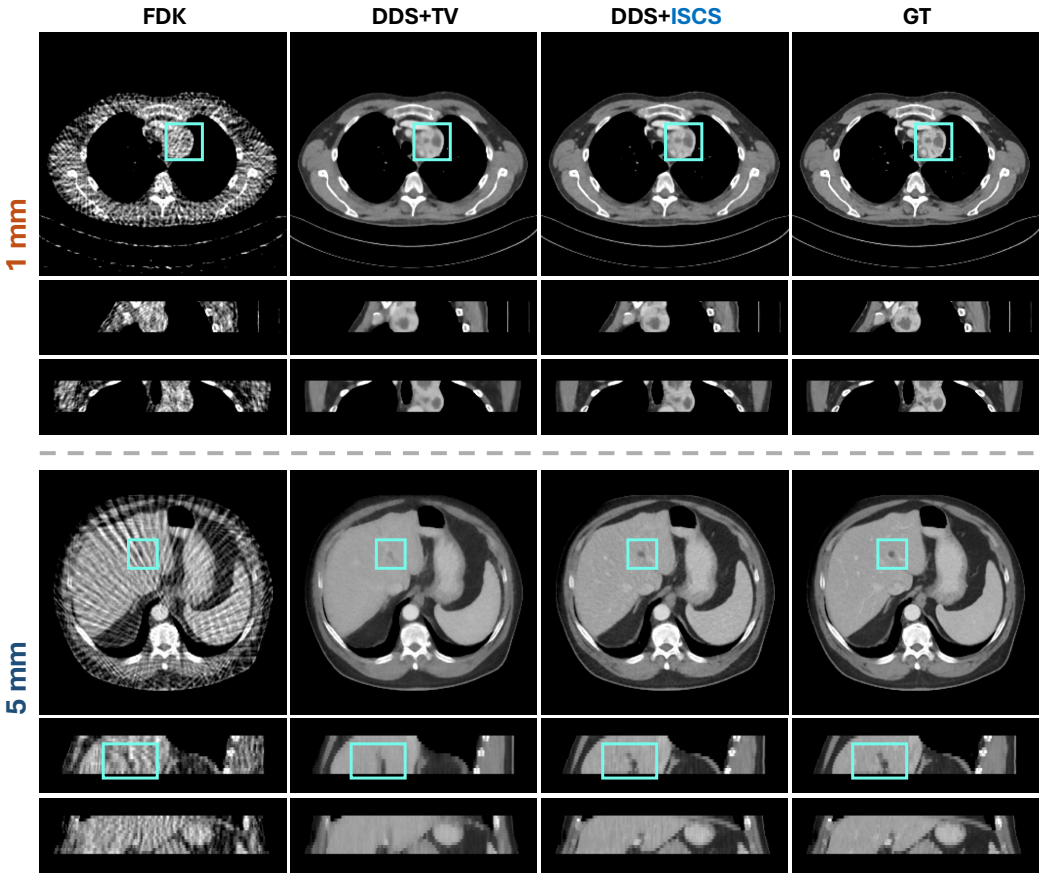

Figure R 5. Qualitative comparison of compared methods for SVCT of 30 views. Two representative subjects with slice thicknesses of 1 mm (top) and 5 mm (bottom) are shown. Cyan boxes mark the lesion regions. The display window is [-175, 275] HU.