



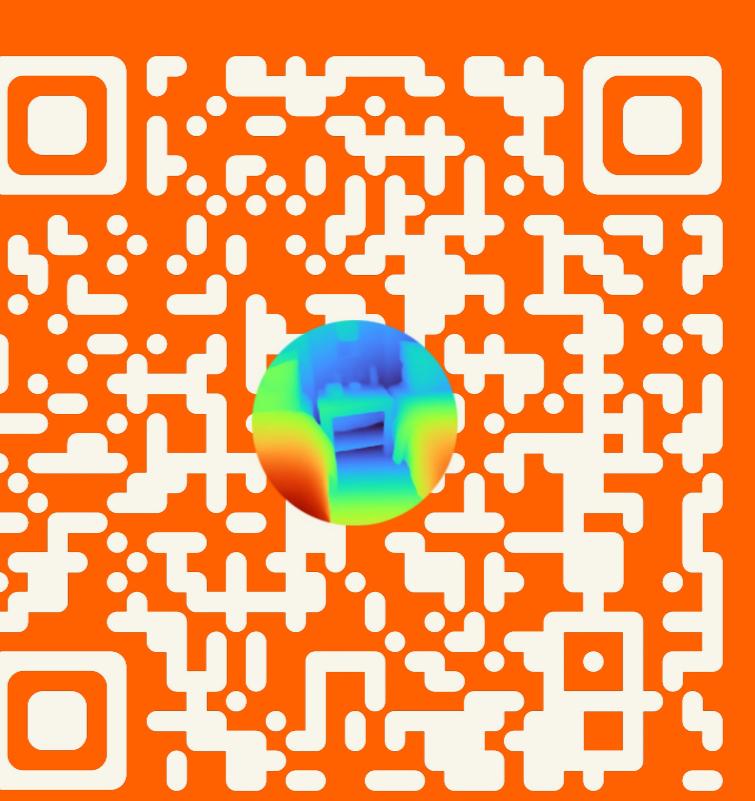
SimpleRecon

3D Reconstruction Without 3D Convolution

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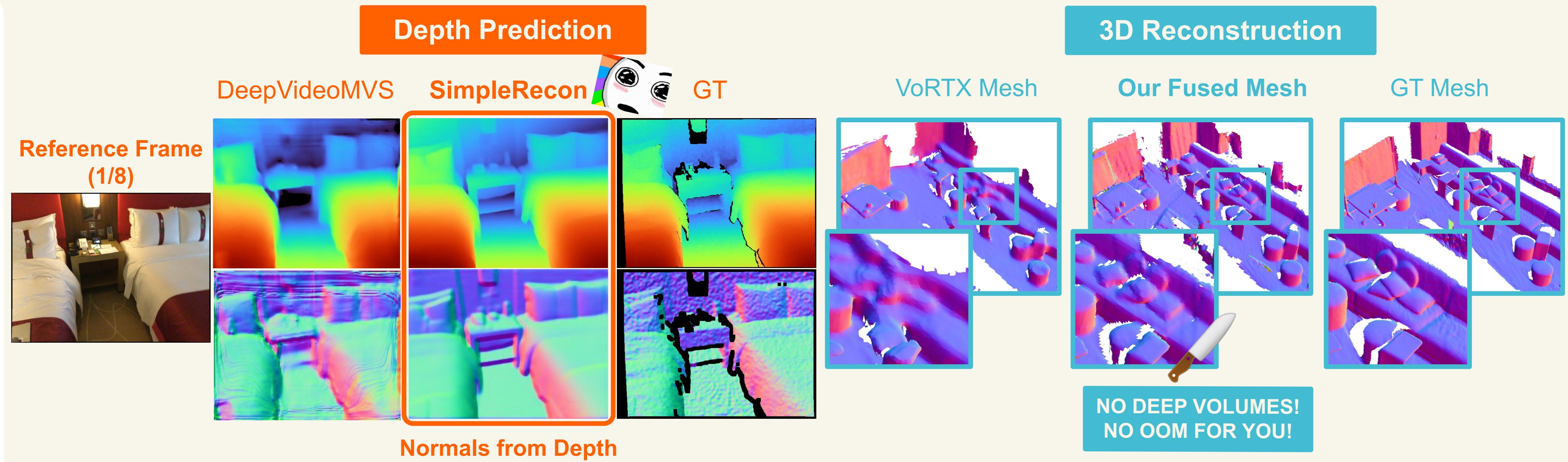
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*Work done while at Niantic, during Mohamed's internship.

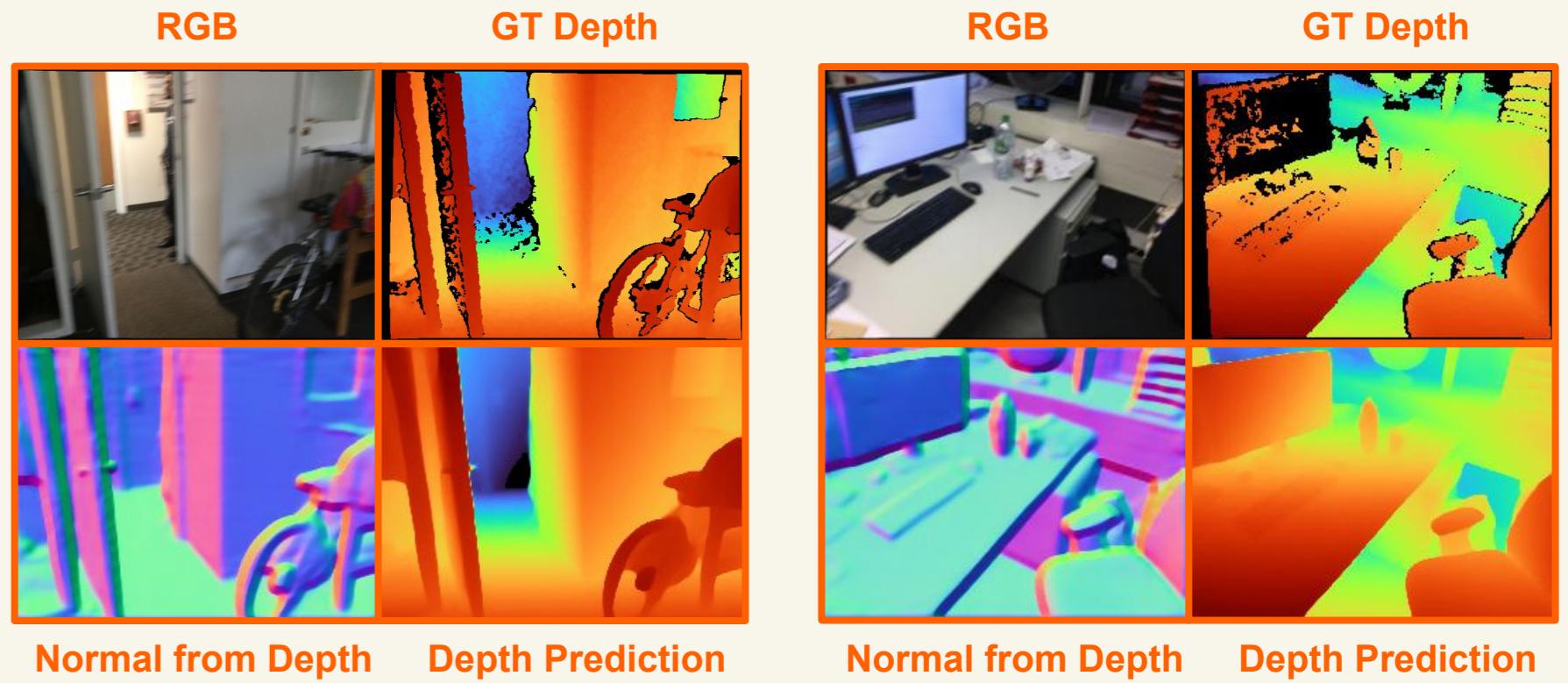


SimpleRecon

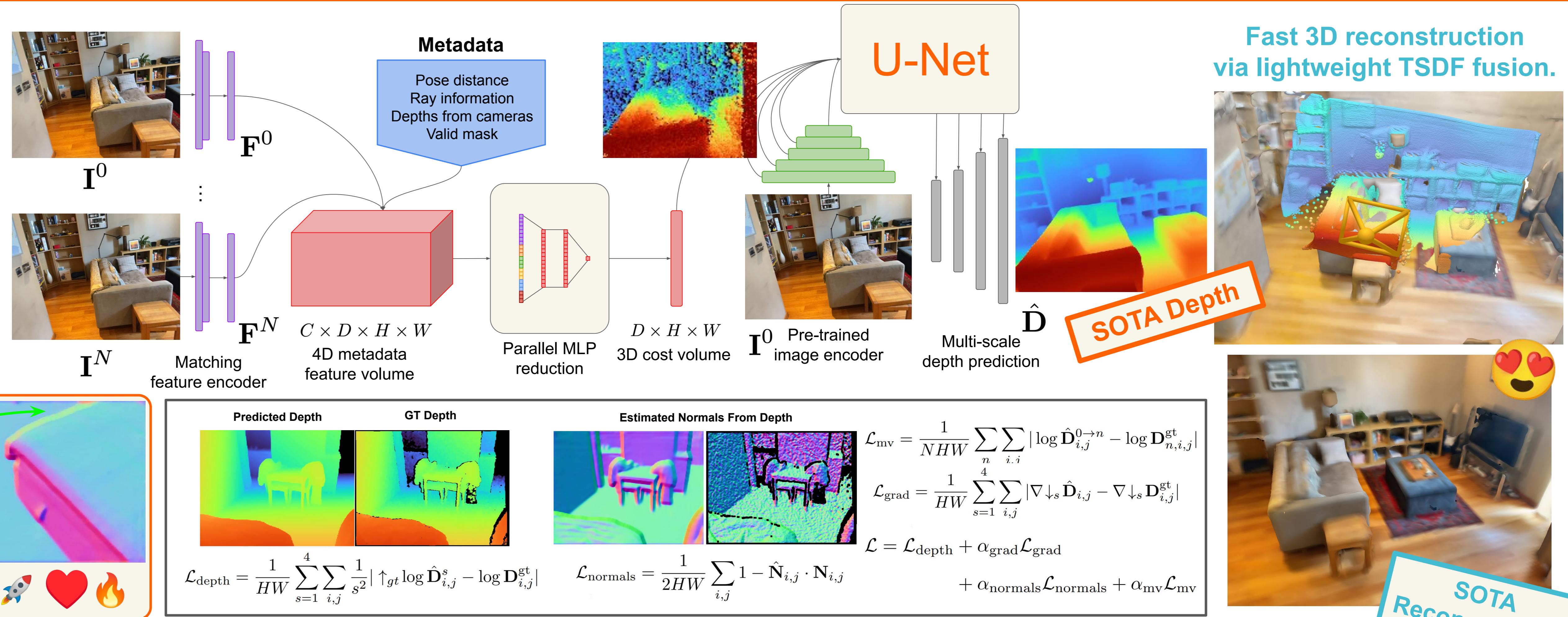
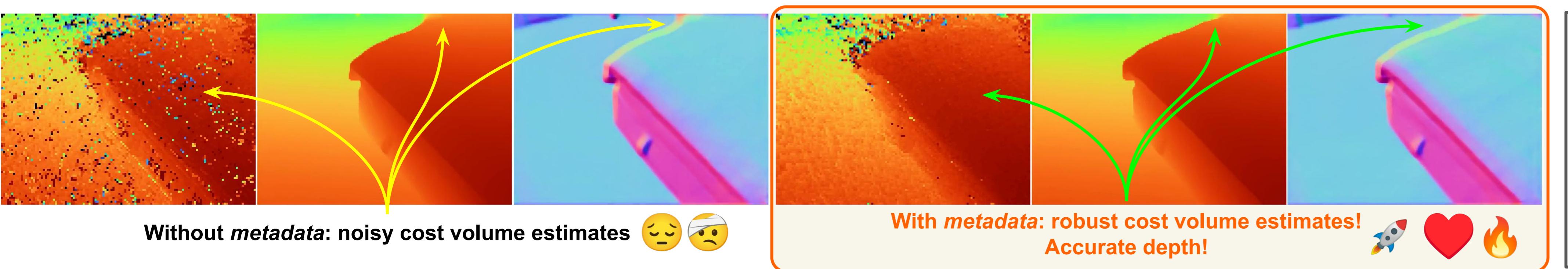
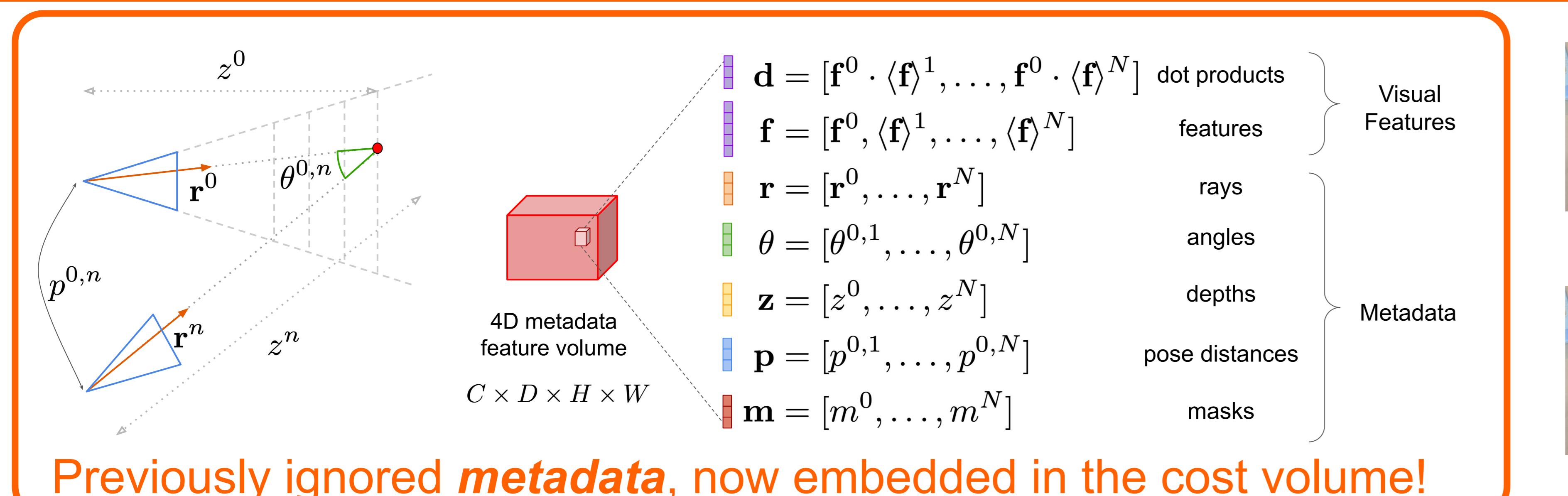
- ↓ Posed RGB Images
- ↑ Sharp metric monocular depth
- + SOTA monocular depth from video
- + SOTA 3D reconstruction
- Simple architecture, no 3D convs
- Fast 3D recon via off-the-shelf fusion
- ★ Novel metadata



NO 3D CONVS! NO LSTMs!
Fast 3D Reconstruction!



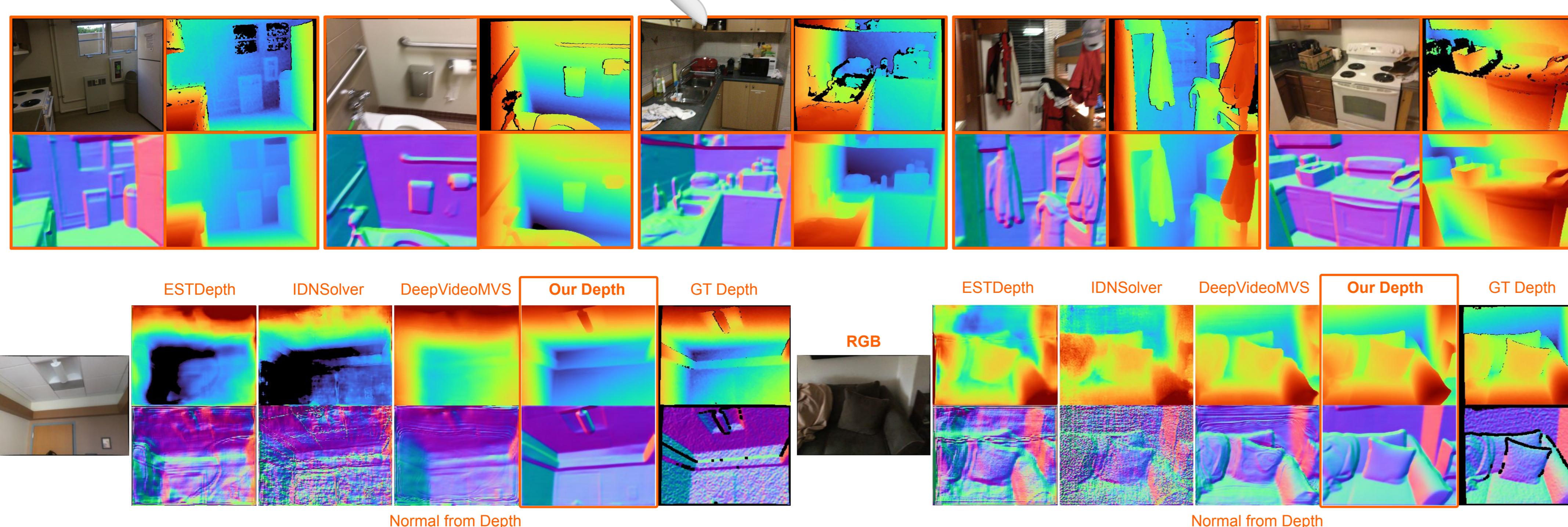
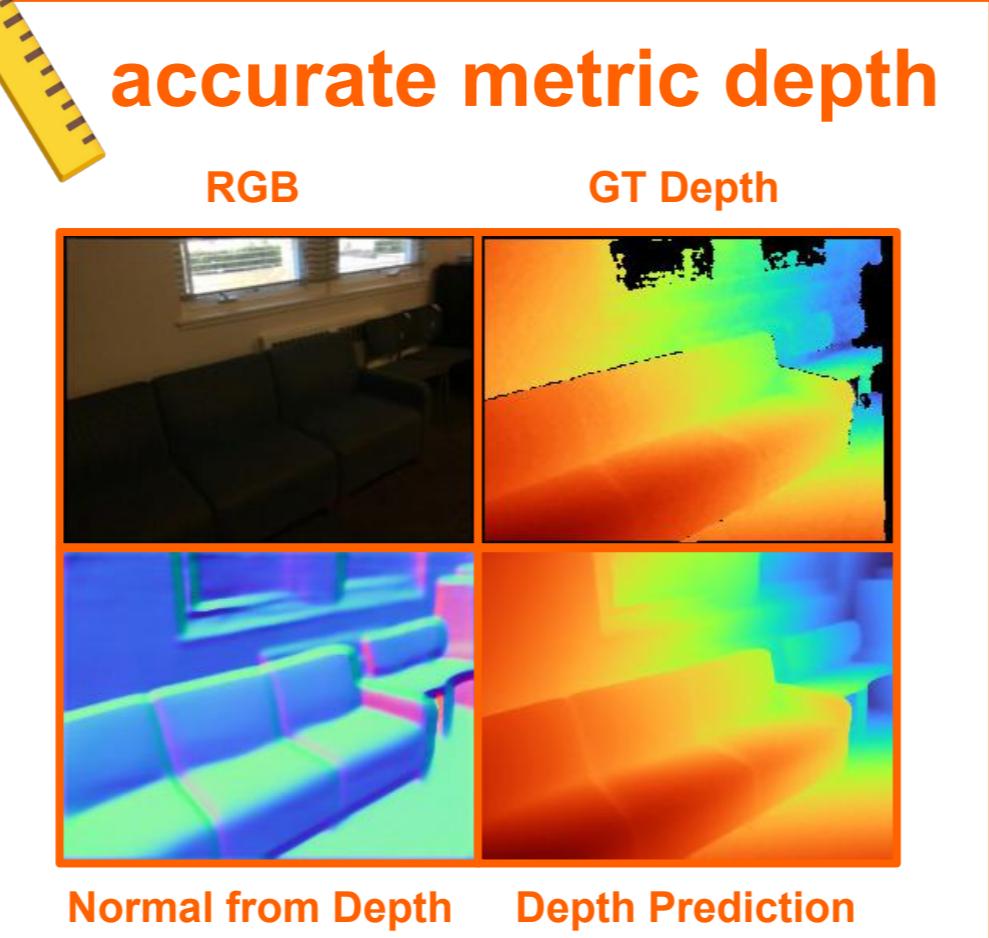
Method



Depth Results

ScanNetv2				7Scenes						
Abs Diff↓	Abs Rel↓	Sq Rel↓	$\delta < 1.05 \uparrow$	$\delta < 1.25 \uparrow$	Abs Diff↓	Abs Rel↓	Sq Rel↓	$\delta < 1.05 \uparrow$	$\delta < 1.25 \uparrow$	
DPSNet [26]	0.1552	0.0795	0.0299	49.36	93.27	0.1966	0.1147	0.0550	38.81	87.07
MVDepthNet [70]	0.1648	0.0848	0.0343	46.71	92.77	0.2009	0.1161	0.0623	38.81	87.70
DELTAS [62]	0.1497	0.0786	0.0276	48.64	93.78	0.1915	0.1140	0.0490	36.36	88.13
GPMVS [23]	0.1494	0.0757	0.0292	51.04	93.96	0.1739	0.1003	0.0462	42.71	90.32
DeepVideoMVS, fusion [12]*	0.1186	0.0583	0.0190	60.20	96.76	0.1448	0.0828	0.0335	47.96	93.79
Ours (no metadata)	0.0941	0.0467	0.0139	70.48	97.84	0.1105	0.0617	0.0175	57.30	97.02
Ours	0.0885	0.0434	0.0125	73.16	98.09	0.1045	0.0575	0.0153	59.78	97.38

*trained with more data



Reconstruction Results

