

Supplementary Material: EndoGSLAM: Real-Time Dense Reconstruction and Tracking in Endoscopic Surgeries using Gaussian Splatting

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0.1 Implementation Details

We implement mainly with PyTorch and CUDA and provide two versions, *i.e.* EndoGSLAM-H (high-quality) and EndoGSLAM-R (real-time). For EndoGSLAM-R, we use $\rho_e = 0.3$ to reproject fewer pixels during expansion, optimize camera poses for 5 iterations/frame at half resolution, and refine for 6 iterations every 2 frames. Keyframes are selected every 4 frames, and we set $p_c = 0.95$ to emphasize the current frame. As for EndoGSLAM-H, we set $\rho_e = 0.5$, optimize camera poses for 15 iterations/frame, and refine for 25 iterations/frame. Keyframes are selected every 8 frames, and $p_c = 0.1$ prioritizes keyframes for quality improvement. All the experiments are done on a machine with Core i3700K CPU and RTX 4090 GPU running Ubuntu 22.04.