Dense Match Summarization for Faster Two-view Estimation

			AUC			Runtime (ms)		
Sampling	Scoring	Refinement	5°	10°	20°	Med.	Avg.	Speedup
Dense	Dense	Dense	$67.38{\scriptstyle\pm0.10}$	$79.61{\scriptstyle \pm 0.08}$	$87.96{\scriptstyle \pm 0.06}$	66.0	79.0	1.0x
Center	Approx. Center Approx. Center Center	Dense Dense Approx. Approx. Center	$\begin{array}{c} 67.21{\pm}0.08\\ 67.12{\pm}0.08\\ 66.87{\pm}0.07\\ 66.70{\pm}0.06\\ 65.95{\pm}0.10\\ \end{array}$	$\begin{array}{c} 79.65{\pm}0.06\\ 79.36{\pm}0.08\\ 79.43{\pm}0.05\\ 79.09{\pm}0.08\\ 78.75{\pm}0.07\end{array}$	$\begin{array}{c} 88.12{\pm}0.05\\ 87.68{\pm}0.09\\ 87.98{\pm}0.05\\ 87.55{\pm}0.08\\ 87.33{\pm}0.09\end{array}$	6.8 5.3 2.7 1.5 1.2	9.3 6.9 4.4 2.2 1.9	9.8x 12.3x 24.6x 45.2x 55.0x
Approx.*	Approx. Approx.	Dense Approx.	${}^{64.70 \pm 0.00}_{63.14 \pm 0.00}$	$76.79{\scriptstyle \pm 0.00} \\ 75.27{\scriptstyle \pm 0.00}$	$\begin{array}{c} 85.08 {\pm} 0.00 \\ 83.76 {\pm} 0.00 \end{array}$	8.4 4.2	9.7 4.3	7.9x 15.8x

Supplementary Material

Table 5. Ablation on Integration in RANSAC. We compare usage of our two summarization schemes (Center, Approx.) in different stages of RANSAC. *For sampling and model estimation with approximated sampling, we modify RANSAC to sample exhaustively.

1. Additional Ablation Results

In Table 5, we include some additional results on the ablation on RANSAC integration to what was presented in the main paper. In addition to AUC@5°, we also present AUC@10° and AUC@20°. In addition to the median estimation runtime, we also present the average runtime per image pair and seed.

We also include sampling and model estimation from the summarized correspondences, using the M_k matrix. Using SVD, we find a 4-dimensional approximate nullspace to M_k and use as basis in the 5-point solver. Since this allows us to estimate a model from a single summarized correspondence, reducing the number of unique minimal samples to K, we modify RANSAC to sample exhaustively instead of randomly for this method. We refer to this method as Approximated sampling.