Supplemental Material
Rolling Shutter Bundle Adjustment

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Abstract

This document is part of the supplemental material for the CVPR submission "Rolling Shutter Bundle Adjustment". The document contains additional plots, and frames from the used sequences. The evaluation scores, and the corresponding plots are generated exactly as described in the main paper.

1. Evaluation Sequences

We have collected a set of 36 sequences using the rig in figure 1. Frames from the sequences are shown together with plots of the results in the next section.

2. Results

The results for all evaluated sequences are summarized in table 1. The values in the table are computed using the translation error measure defined in the main paper. This measure computes a discretized area between the ground-truth trajectory, and the evaluated trajectory. Figures 2 and onwards show 2D plots of each evaluated trajectory, together with the corresponding ground-truth trajectory. The plots show upward motion along the horizontal axis, and forward motion along the vertical. Trajectories are scaled to fit inside a square bounding box.

Figure 1. Left: Camera rig used in experiments. Right: Synchronization procedure.
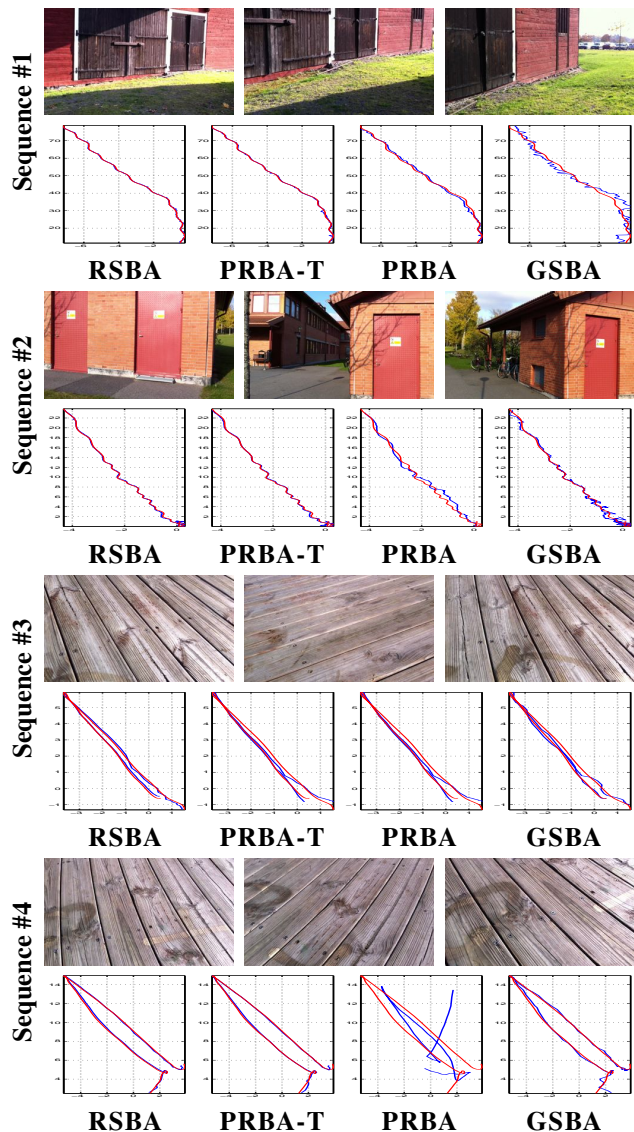

Figure 2. Results for sequences #1-#4. Upper rows show frames from the respective sequences. Lower rows shows 2D projections of the 3D camera trajectories, for each of the four methods. Ground truth curves are RED, result curves are BLUE.

seq#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
RSBA	0.042	0.124	**0.096**	0.129	**0.088**	0.126	**0.019**	**0.500**	0.154	**0.534**	**0.032**	0.091	0.116	**0.029**	**0.066**	**0.179**	0.055	**0.591**
PRBA-T	**0.039**	**0.101**	0.125	**0.128**	0.968	0.247	0.033	2.600	0.154	1.110	0.068	0.192	0.240	0.286	0.092	0.208	0.060	3.280
PRBA	0.182	1.150	0.127	2.860	0.988	0.247	0.033	2.590	0.154	1.360	0.066	0.194	0.242	0.344	0.093	0.208	0.060	3.280
GSBA	0.341	0.230	0.154	0.230	0.680	**0.122**	0.085	1.960	0.271	1.080	0.082	0.217	0.471	0.203	0.154	0.308	0.135	0.679

seq#	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
RSBA	4.590	**0.049**	**0.018**	**0.123**	**0.089**	**0.244**	**0.387**	**0.425**	**0.061**	**0.584**	**0.102**	**0.309**	0.701	**0.060**	**0.191**	**0.068**	**0.036**	**0.026**
PRBA-T	**2.370**	0.322	0.061	3.930	0.131	0.407	0.502	1.520	0.238	3.320	0.104	6.990	1.360	0.233	1.080	0.153	0.083	0.039
PRBA	2.370	0.328	0.078	1.140	0.185	0.476	0.539	1.340	0.269	3.330	0.644	7.390	16.00	0.233	1.090	0.153	0.081	0.186
GSBA	135.0	0.235	0.123	0.374	0.170	0.785	0.886	0.585	0.129	0.952	0.235	0.714	**0.679**	0.180	0.798	0.204	0.110	0.071

Table 1. Error of the trajectories estimated from rolling shutter sequences against estimates from global shutter sequences. Note that methods are ordered differently in the main paper.
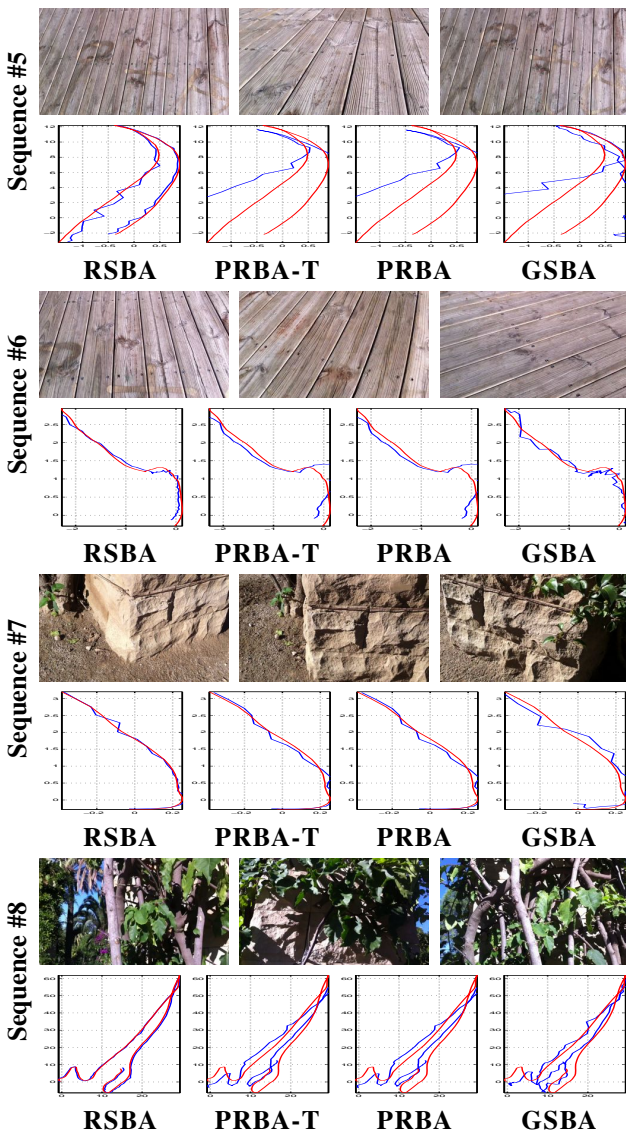

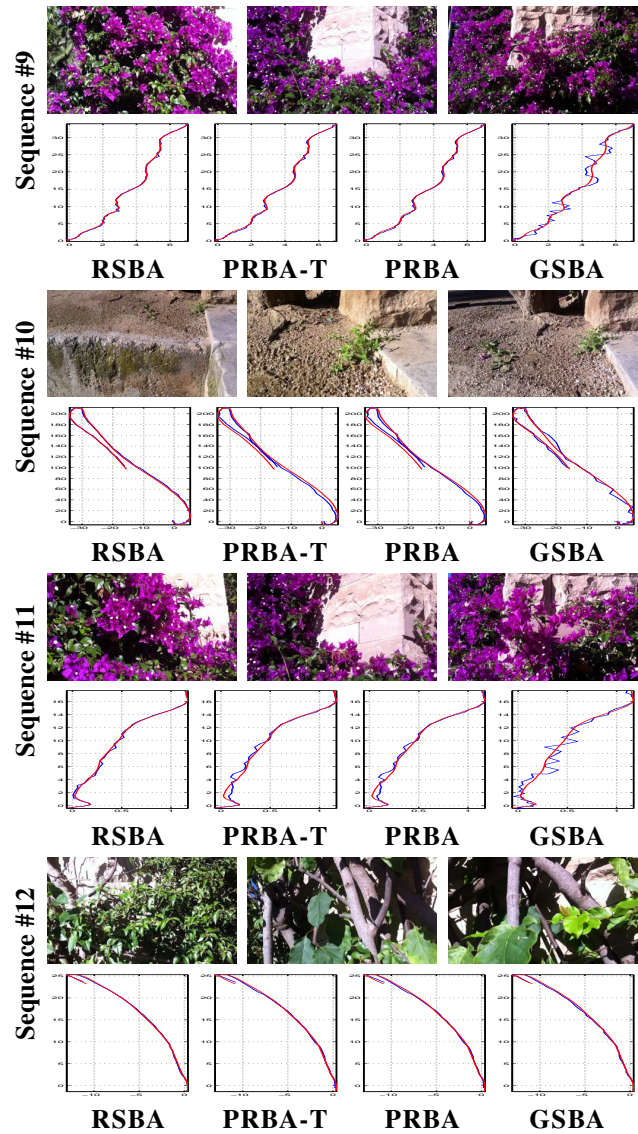Figure 3. Results for sequences #5-#8. See figure 2 for description.

Figure 4. Results for sequences #9-#12. See figure 2 for description.
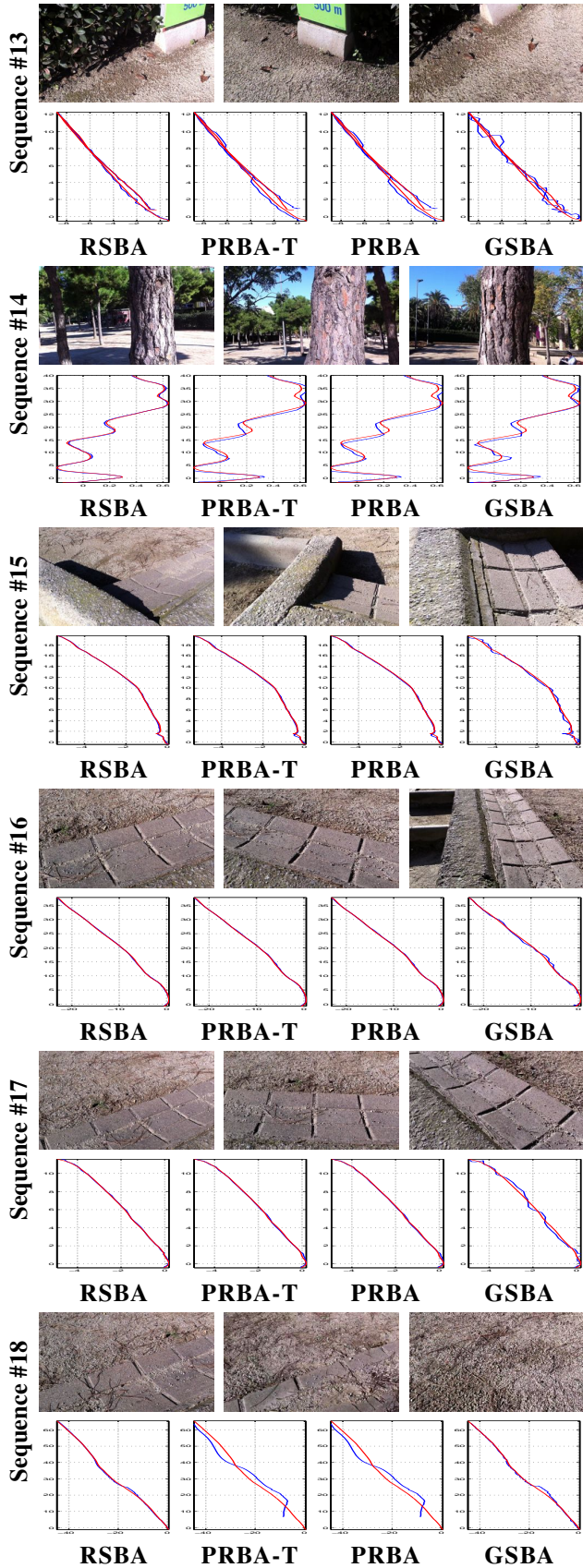
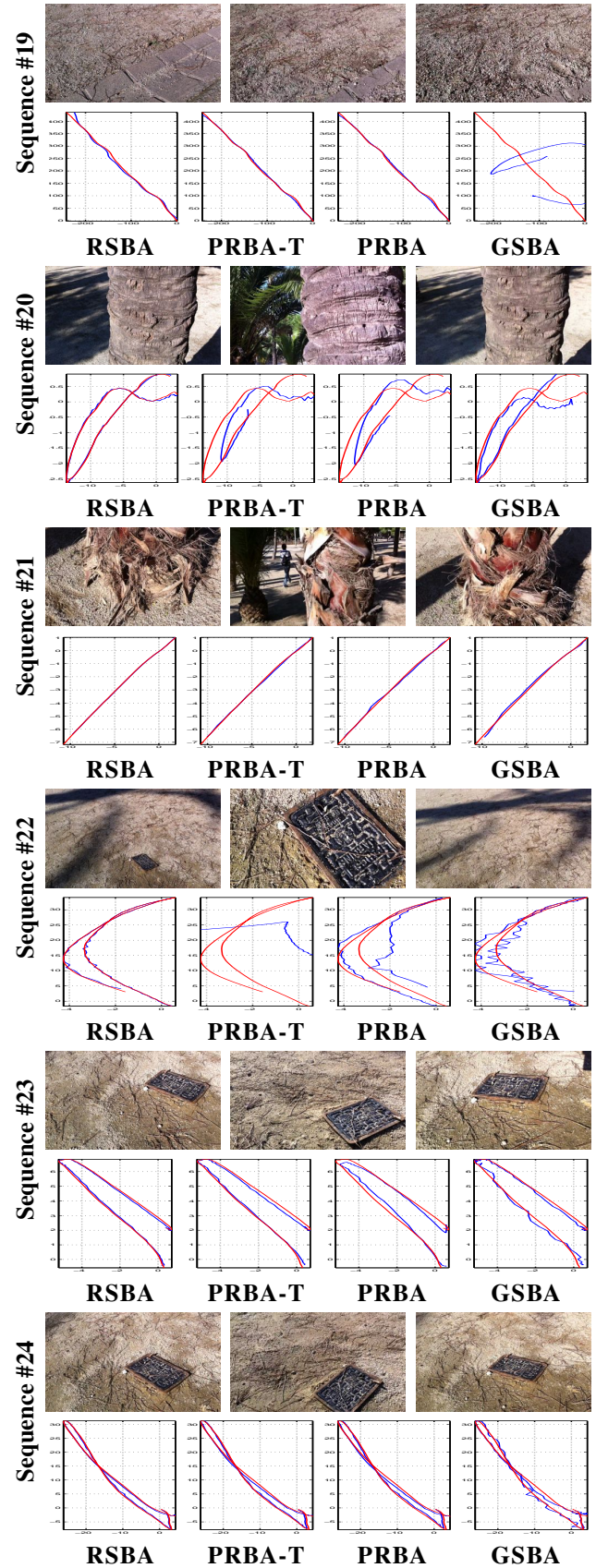Figure 5. Results for sequences #13-#18. See figure 2 for description.

Figure 6. Results for sequences #19-#24. See figure 2 for description.
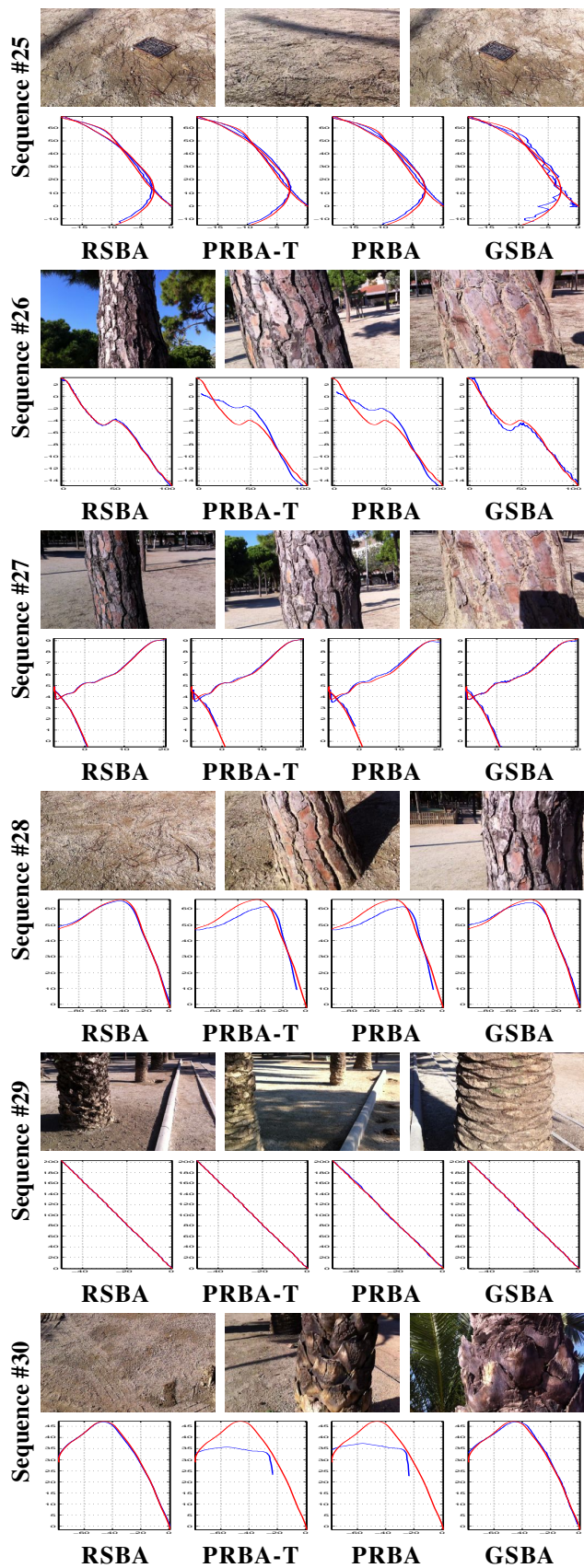
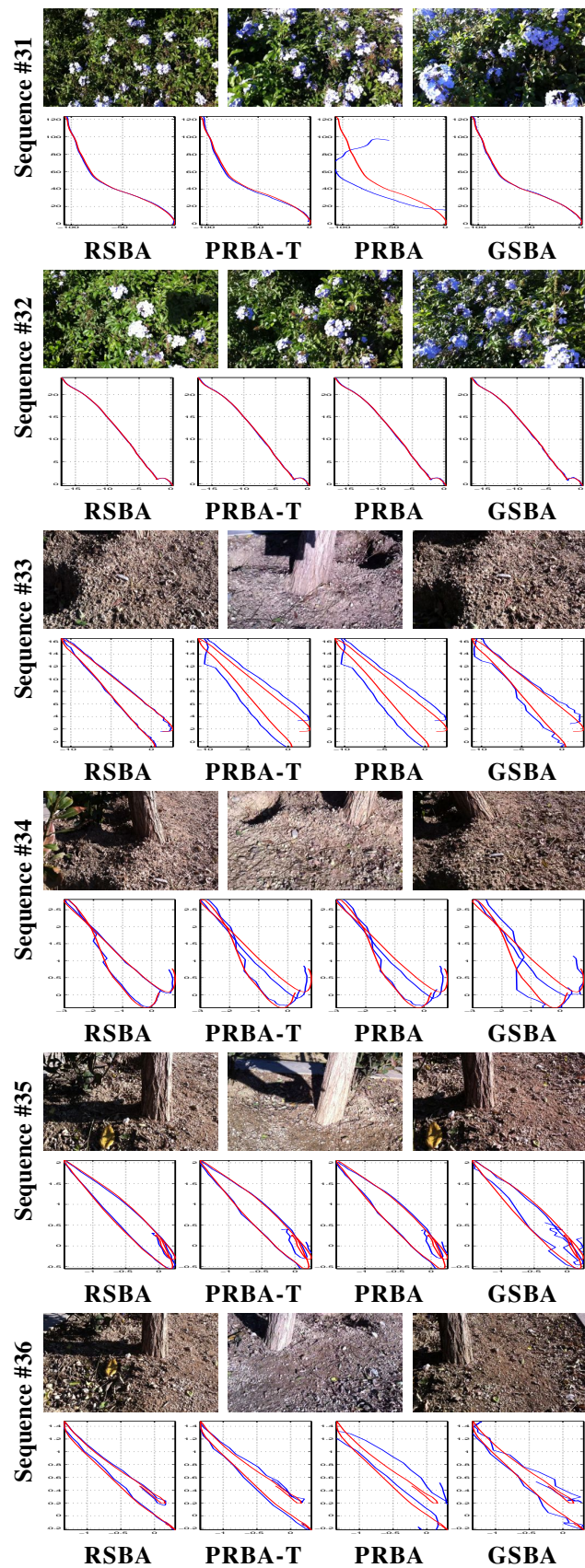Figure 7. Results for sequences #25-#30. See figure 2 for description.

Figure 8. Results for sequences #31-#36. See figure 2 for description.