

# Supplementary Material: *A Benchmark Evaluation of Adaptive Image Compression for Multi Picture Object Stereoscopic Images*

This document details the experimental results related to the paper entitled “*A Benchmark Evaluation of Adaptive Image Compression for Multi Picture Object Stereoscopic Images*”. In the experiments here reported, the proposed method has been evaluated on 60 stereopairs from all the Middlebury Stereo Dataset versions published between 2001 and 2014, considering a low-quality factor equal to 65 or 70.

Table S1. Results on the Middlebury-scenes 2014 dataset, considering a low quality of 65.

ID	Stereopair	Size	# of Blocks	Bitrate Saving (%)	Method							
					Low Quality 65							
					LmedS				Norm8Points			
					Harris		SIFT		Harris		SIFT	
					Lossy (dB)	Time (s)	Lossy (dB)	Time (s)	Lossy (dB)	Time (s)	Lossy (dB)	Time (s)
1	Adirondack-perfect	1988 × 2880	3.479	43	0.58	933	0.58	252	<10 <sup>-4</sup>	304	1.59	352
2	Backpack-perfect	2016 × 2940	3.600	39	1.32	846	<10 <sup>-4</sup>	684	1.32	239	1.33	339
3	Bicycle1-perfect	2008 × 2988	3.577	37	1.59	137	1.59	622	1.59	395	1.59	164
4	Cable-perfect	1984 × 2796	3.381	41	1.59	519	1.59	372	1.59	121	2.18	1,070
5	Classroom1-perfect	1920 × 3000	3.478	42	1.00	174	1.00	190	1.00	124	1.00	535
6	Couch-perfect	1992 × 2300	2.793	42	1.59	266	2.00	339	2.59	1,068	2.01	356
7	Flowers-perfect	1980 × 2880	3.479	38	2.17	306	2.17	378	2.59	1,197	2.59	1,503
8	Jadeplant-perfect	1988 × 2632	3.185	40	1.74	346	2.32	632	2.91	924	2.92	1,040
9	Mask-perfect	2008 × 2792	3.381	40	2.74	140	1.41	600	1.83	377	2.75	1,813
10	Motorcycle-perfect	2000 × 2964	3.577	38	1.74	218	1.74	525	1.74	303	2.07	605
11	Piano-perfect	1920 × 2820	3.243	40	1.74	170	1.74	304	2.06	178	2.07	347
12	Pipes-perfect	1924 × 2960	3.431	38	2.00	752	2.91	800	2.00	156	2.01	246
13	Playroom-perfect	1908 × 2800	3.243	38	2.32	349	2.32	687	2.32	265	2.32	478
14	Playtable-perfect	1848 × 2724	3.082	38	2.00	133	0.68	369	1.81	325	0.68	240
15	Recycle-perfect	1924 × 2864	3.290	42	<10 <sup>-4</sup>	154	<10 <sup>-4</sup>	230	<10 <sup>-4</sup>	92	<10 <sup>-4</sup>	151
16	Shelves-perfect	2000 × 2952	3.577	41	1.41	880	1.00	480	2.00	1,298	1.00	386
17	Shopvac-perfect	1996 × 2356	2.842	42	<10 <sup>-4</sup>	241	<10 <sup>-4</sup>	365	<10 <sup>-4</sup>	396	<10 <sup>-4</sup>	375
18	Sticks-perfect	2008 × 2864	3.430	38	2.42	164	1.26	351	2.23	778	1.49	253
20	Sword1-perfect	2020 × 2912	3.600	39	1.49	978	0.58	572	1.49	208	1.49	677
21	Sword2-perfect	2000 × 2856	3.430	42	2.59	156	1.00	378	1.00	748	1.00	288
22	Umbrella-perfect	2016 × 2960	3.650	42	<10 <sup>-4</sup>	183	<10 <sup>-4</sup>	646	<10 <sup>-4</sup>	391	1.00	1,000
23	Vintage-perfect	1924 × 2912	3.384	36	2.17	201	2.17	189	2.59	257	2.59	887
				Average	40	1.55	375	1.28	453	1.58	461	596
				St. Dev.	2.02	0.81	296	0.86	179	0.91	367	446

Table S2. Results on the middlebury-scenes 2014 dataset, considering a low quality of 70.

ID	Stereopair	Size	# of Blocks	Bitrate Saving (%)	Method							
					Low Quality 70							
					LmedS				Norm8Points			
					Harris		SIFT		Harris		SIFT	
					Lossy (dB)	Time (s)	Lossy (dB)	Time (s)	Lossy (dB)	Time (s)	Lossy (dB)	Time (s)
1	Adirondack-perfect	1988 × 2880	3479	38	<10 <sup>-4</sup>	208	<10 <sup>-4</sup>	292	<10 <sup>-4</sup>	113	1.17	582
2	Backpack-perfect	2016 × 2940	3600	33	0.32	679	<10 <sup>-4</sup>	541	1.59	1,184	1.33	474
3	Bicycle1-perfect	2008 × 2988	3577	32	0.59	111	1.59	726	2.18	359	2.18	484
4	Cable-perfect	1984 × 2796	3381	36	2.18	882	2.18	674	0.59	183	0.59	201
5	Classroom1-perfect	1920 × 3000	3478	37	1.00	148	1.00	156	1.00	890	1.00	584
6	Couch-perfect	1992 × 2300	2793	36	0.59	181	0.59	279	2.01	473	2.01	350
7	Flowers-perfect	1980 × 2880	3479	33	1.17	851	1.17	395	1.17	444	1.17	385
8	Jadeplant-perfect	1988 × 2632	3185	34	1.74	441	1.74	848	2.01	489	2.92	1,414
9	Mask-perfect	2008 × 2792	3381	34	1.84	774	2.16	1,448	2.16	294	1.84	633
10	Motorcycle-perfect	2000 × 2964	3577	33	1.42	392	1.74	458	1.74	249	2.07	392
11	Piano-perfect	1920 × 2820	3243	35	1.74	222	2.07	708	1.74	210	2.07	240
12	Pipes-perfect	1924 × 2960	3431	33	2.01	671	2.33	1,346	2.01	255	2.01	268
13	Playroom-perfect	1908 × 2800	3243	33	2.07	543	2.07	772	2.07	138	2.33	413
14	Playtable-perfect	1848 × 2724	3082	32	0.90	966	0.68	168	0.68	207	0.90	340
15	Recycle-perfect	1924 × 2864	3290	37	<10 <sup>-4</sup>	184	<10 <sup>-4</sup>	191	1.00	95	1.00	446
16	Shelves-perfect	2000 × 2952	3577	36	<10 <sup>-4</sup>	289	<10 <sup>-4</sup>	307	0.59	525	2.01	1,088
17	Shopvac-perfect	1996 × 2356	2842	37	<10 <sup>-4</sup>	269	<10 <sup>-4</sup>	306	<10 <sup>-4</sup>	1003	<10 <sup>-4</sup>	315
18	Sticks-perfect	2008 × 2864	3430	32	0.26	226	0.68	333	1.27	253	1.27	409
20	Sword1-perfect	2020 × 2912	3600	33	0.91	1,488	0.59	407	1.91	1,737	0.91	319
21	Sword2-perfect	2000 × 2856	3430	36	2.18	1,696	1.00	546	1.00	1,196	1.00	855
22	Umbrella-perfect	2016 × 2960	3650	38	1.00	223	1.00	733	1.00	242	1.00	1,134
23	Vintage-perfect	1924 × 2912	3384	31	1.17	324	1.17	169	2.59	165	1.17	241
				Average	35	1.05	535	1.08	537	1.38	486	526
				St. Dev.	2.08	0.76	433	0.81	352	0.73	437	320

Table S3. Results on the Middlebury-scenes 2006 dataset, considering a low quality of 65.

ID	Stereo pair	Size	# of Blocks	Bitrate Saving (%)	Method							
					Low Quality 65							
					LmedS				Norm8Points			
					Harris		SIFT		Harris		SIFT	
					Lossy (dB)	Time (sec)	Lossy (dB)	Time (sec)	Lossy (dB)	Time (sec)	Lossy (dB)	Time (sec)
1	Aloe	555 × 641	224	37	1.58	6	2.01	11	1.83	4	2.01	11
2	Baby1	555 × 620	224	40	0.87	4	1.24	6	1.65	26	1.24	6
3	Baby2	555 × 620	224	39	1.02	12	1.02	9	1.35	18	1.02	9
4	Baby3	555 × 656	238	40	1.61	36	1.35	13	1.02	6	1.35	13
5	Bowling1	555 × 626	224	39	1.00	10	1.59	5	1.91	27	1.59	5
6	Bowling2	555 × 665	238	39	1.81	9	2.27	15	1.81	13	2.27	15
7	Cloth1	555 × 626	224	36	1.52	11	1.77	6	1.77	11	1.77	6
8	Cloth2	555 × 650	224	38	1.75	22	1.65	9	1.85	20	1.65	9
9	Cloth3	555 × 626	224	38	1.85	9	1.85	15	2.18	24	1.85	15
10	Cloth4	555 × 650	224	37	2.18	27	1.84	8	1.91	10	1.84	8
11	Flowerpots	555 × 656	238	39	1.59	16	2.01	12	1.59	7	2.01	12
12	Lampshade1	555 × 650	224	39	3.18	14	3.18	13	1.91	9	3.18	13
13	Lampshade2	555 × 650	224	39	2.01	8	2.01	6	2.01	14	2.01	6
14	Midd1	555 × 698	252	36	1.49	5	2.42	31	1.49	8	2.42	31
15	Midd2	555 × 683	238	36	1.27	5	1.27	10	1.27	4	1.27	10
16	Monopoly	555 × 665	238	36	1.27	8	1.94	26	1.94	5	1.94	26
17	Plastic	555 × 635	224	34	0.42	9	0.42	13	0.42	7	0.42	13
18	Rocks1	555 × 638	224	38	1.65	8	2.40	13	1.65	15	2.40	13
19	Rocks2	555 × 638	224	38	1.65	9	2.05	8	2.05	5	2.05	8
20	Wood1	555 × 686	238	42	0.59	15	0.59	6	1.33	29	0.59	6
21	Wood2	555 × 653	224	40	1.42	31	0.42	8	<10 <sup>-4</sup>	6	0.42	8
Average				38	1.53	13	1.68	12	1.57	13	1.68	12
St. Dev.				1.68	0.59	8.73	0.69	6.50	0.54	8.11	0.69	6.50

Table S4. Results on the Middlebury-scenes 2006 dataset, considering a low quality of 70.

ID	Stereo pair	Size	# of Blocks	Bitrate Saving (%)	Method							
					Low Quality 70							
					LmedS				Norm8Points			
					Harris		SIFT		Harris		SIFT	
					Lossy (dB)	Time (s)	Lossy (dB)	Time (s)	Lossy (dB)	Time (s)	Lossy (dB)	Time (s)
1	Aloe	555 × 641	224	32	1.26	9	1.45	18	1.52	8	1.52	8
2	Baby1	555 × 620	224	34	0.66	4	1.32	34	1.32	28	0.87	7
3	Baby2	555 × 620	224	33	1.61	18	1.61	32	1.61	9	1.02	10
4	Baby3	555 × 656	238	34	0.91	6	1.17	40	0.91	16	0.91	11
5	Bowling1	555 × 626	224	33	1.00	10	1.00	26	1.91	16	1.00	5
6	Bowling2	555 × 665	238	33	2.27	30	1.40	14	1.40	7	2.08	8
7	Cloth1	555 × 626	224	31	1.83	28	1.47	29	1.47	9	1.71	13
8	Cloth2	555 × 650	224	32	1.32	13	1.21	15	1.75	10	1.65	7
9	Cloth3	555 × 626	224	32	1.50	10	1.50	16	1.69	6	1.50	10
10	Cloth4	555 × 650	224	31	2.05	25	1.49	13	1.49	10	1.78	8
11	Flowerpots	555 × 656	238	34	1.59	9	1.59	22	2.01	16	2.42	19
12	Lampshade1	555 × 650	224	33	2.33	11	2.33	14	2.59	26	2.33	8
13	Lampshade2	555 × 650	224	34	2.01	8	2.01	8	2.01	8	2.33	30
14	Midd1	555 × 698	252	31	1.27	11	1.27	11	1.27	8	1.49	9
15	Midd2	555 × 683	238	31	0.68	4	0.68	14	0.68	4	1.49	29
16	Monopoly	555 × 665	238	30	1.10	5	1.94	29	1.27	15	1.94	20
17	Plastic	555 × 635	224	29	1.42	22	0.42	6	0.42	18	0.42	8
18	Rocks1	555 × 638	224	32	2.27	33	1.33	9	2.40	37	1.65	7
19	Rocks2	555 × 638	224	32	1.50	9	0.91	6	1.65	9	1.65	6
20	Wood1	555 × 686	238	35	0.56	16	<10 <sup>-4</sup>	12	1.33	29	<10 <sup>-4</sup>	8
21	Wood2	555 × 653	224	33	1.42	25	0.42	10	<10 <sup>-4</sup>	6	1.42	22
Average				32	1.47	15	1.26	18	1.46	14	1.48	12
St. Dev.				1.45	0.53	8.98	0.55	9.89	0.61	9.09	0.62	7.40

Table S5. Results on the middlebury-scenes 2005 dataset, considering a low quality of 65.

ID	Stereo pair	Size	# of Blocks	Bitrate Saving (%)	Method							
					Low Quality 65							
					LmedS				Norm8Points			
					Harris		SIFT		Harris		SIFT	
					Lossy (dB)	Time (sec)	Lossy (dB)	Time (sec)	Lossy (dB)	Time (sec)	Lossy (dB)	Time (sec)
1	Art	555X695	238	42	2,10	42	1,98	22	1,72	15	1,98	13
2	Books	555X695	238	15	2,01	15	2,28	23	2,28	11	2,61	37
3	Computer	555X665	238	13	1,69	13	1,69	8	1,95	7	1,95	12
4	Dolls	555X695	238	10	1,33	10	1,33	12	1,87	43	1,76	13
5	Drumsticks	555X695	238	13	2,01	13	2,01	10	2,12	7	2,12	13
6	Dwarves	555X695	238	13	1,59	13	1,59	11	1,59	16	1,59	10
7	Laundry	555X671	238	13	2,00	13	1,84	11	2,40	8	2,40	45
8	Moebius	555X695	238	18	1,62	18	1,62	12	1,62	9	2,17	26
9	Reindeer	555X671	238	9	1,84	9	1,64	12	1,84	6	1,84	8
Average				16	1,80	16	1,78	14	1,93	13	2,05	20

Table S6. Results on the Middlebury-scenes 2005 dataset, considering a low quality of 70.

				Method								
Stereopair	Size	# of Blocks	Bitrate Saving (%)	Low Quality 70								
				LmedS				Norm8Points				
				Harris		SIFT		Harris		SIFT		
ID				Lossy (dB)	Time (sec)	Lossy (dB)	Time (sec)	Lossy (dB)	Time (sec)	Lossy (dB)	Time (sec)	
1	Art	555X695	238	32	1,39	23	1,84	33	1,98	30	1,39	14
2	Books	555X695	238	31	1,90	16	2,28	37	2,28	28	1,90	12
3	Computer	555X665	238	30	1,27	9	1,10	9	1,10	6	1,95	9
4	Dolls	555X695	238	32	1,76	25	1,23	15	1,76	30	1,33	12
5	Drumsticks	555X695	238	32	1,74	9	1,74	31	2,01	15	2,01	34
6	Dwarves	555X695	238	32	2,01	29	1,13	9	1,40	16	1,59	24
7	Laundry	555X671	238	30	1,69	11	1,69	11	2,00	17	2,13	42
8	Moebius	555X695	238	33	1,47	12	1,14	9	1,47	6	1,62	9
9	Reindeer	555X671	238	35	2,01	42	1,64	28	1,23	6	1,84	7
Average				32	1,69	19	1,53	20	1,69	17	1,75	18

Table S7. Results on the Middlebury-scenes 2003 dataset, considering a low quality of 65.

Stereopair      Size      # of Blocks				Method								
				Low Quality 65								
				Bitrate Saving (%)	LmedS				Norm8Points			
Harris		SIFT			Harris		SIFT					
ID					Lossy (dB)	Time (sec)	Lossy (dB)	Time (sec)	Lossy (dB)	Time (sec)	Lossy (dB)	Time (sec)
1	cones	375X450	110	39	1,26	3	1,26	3	1,30	7	1,30	2
2	teddy	375X450	110	40	1,21	3	1,21	2	1,52	8	1,41	6
Average				40	1,23	3	1,23	3	1,41	7	1,36	4

Table S8. Results on the Middlebury-scenes 2003 dataset, considering a low quality of 70.

Stereopair      Size      # of Blocks				Method								
				Low Quality 70								
				Bitrate Saving (%)	LmedS				Norm8Points			
					Harris		SIFT		Harris		SIFT	
ID					Lossy (dB)	Time (sec)	Lossy (dB)	Time (sec)	Lossy (dB)	Time (sec)	Lossy (dB)	Time (sec)
1	cones	375X450	110	33	1,13	3	1,17	5	1,38	7	1,33	3
2	teddy	375X450	110	34	1,12	4	1,05	3	1,12	3	1,12	2
Average				34	1,13	3	1,11	4	1,25	5	1,22	3

Table S9. Results on the Middlebury-scenes 2001 dataset, considering a low quality of 65.

ID	Stereopair	Size	# of Blocks	Method									
				Bitrate Saving (%)	Low Quality 65								
					LmedS				Norm8Points				
					Harris		SIFT		Harris		SIFT		
				Lossy (dB)	Time (sec)	Lossy (dB)	Time (sec)	Lossy (dB)	Time (sec)	Lossy (dB)	Time (sec)		
1	barn1	381X432	110	40	1,34	7	1,17	2	1,17	3	1,34	2	
2	barn2	381X430	110	42	0,98	1	0,98	2	0,98	3	0,98	1	
3	bull	381X433	110	42	1,00	1	1,00	2	1,00	2	1,14	3	
4	sawtooth	380X434	110	39	1,45	3	1,45	2	1,63	2	1,68	3	
5	venus	383X434	110	40	1,49	7	1,27	5	1,21	3	1,27	2	
Average				40	1,25	4	1,17	3	1,20	2	1,28	2	

Table S10. Results on the Middlebury-scenes 2001 dataset, considering a low quality of 70.

ID	Stereopair	Size	# of Blocks	Method								
				Low Quality 70								
				Bitrate Saving (%)	LmedS				Norm8Points			
					Harris		SIFT		Harris		SIFT	
				Lossy (dB)	Time (sec)	Lossy (dB)	Time (sec)	Lossy (dB)	Time (sec)	Lossy (dB)	Time (sec)	
1	barn1	381X432	110	34	1,09	2	1,09	3	1,09	3	1,26	2
2	barn2	381X430	110	35	0,77	1	0,77	2	0,77	2	1,04	4
3	bull	381X433	110	35	0,91	3	1,00	3	0,91	3	1,00	2
4	sawtooth	380X434	110	33	1,34	3	1,34	2	1,86	8	1,58	4
5	venus	383X434	110	34	1,08	7	1,08	4	1,32	4	1,27	2
Average				34	1,04	3	1,06	3	1,19	4	1,23	3