

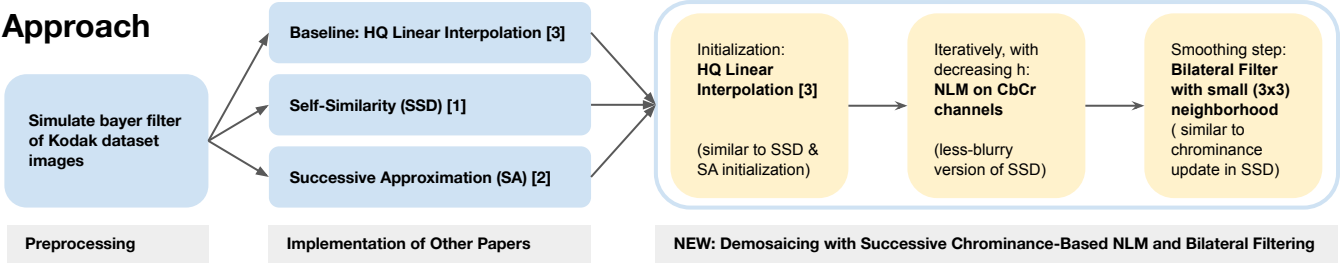
Motivation

Explore non-local and iterative methods to reduce zipper effects and color artifacts

Summary

Developed an altered SSD scheme focused on chrominance channels, and small-neighborhood bilateral filtering preserves details while limiting zipper effects and color artifacts

Approach



Results

	HQLI [3]	SSD [1]	SA [2]	CNLM-BF	CNLM
kodak 1	28.38	28.40	26.83	30.57	28.77
kodak 2	28.38	29.62	30.56	30.17	27.28
kodak 3	32.00	32.81	32.17	32.49	30.73
kodak 4	30.94	31.04	30.98	32.13	29.30
kodak 5	27.83	26.85	25.91	29.35	28.05
kodak 6	29.28	29.42	28.29	30.91	29.30
kodak 7	32.32	30.89	30.15	32.63	30.36
kodak 8	25.55	27.14	23.97	28.16	27.38
kodak 9	34.32	33.57	31.39	35.71	34.63
kodak 10	34.48	31.94	30.23	35.34	34.12
kodak 11	29.95	29.55	28.67	31.57	30.22
kodak 12	34.76	32.96	31.72	35.79	34.10
kodak 13	25.69	26.76	24.56	27.74	26.57
kodak 14	28.73	28.10	29.19	29.84	28.20
kodak 15	29.74	30.66	29.21	31.20	29.19
kodak 16	32.27	30.57	31.39	32.26	32.95
kodak 17	31.08	30.81	30.59	34.04	32.57
kodak 18	28.41	27.71	27.70	29.55	27.96
kodak 19	29.75	30.13	28.73	31.33	29.74
kodak 20	31.06	31.51	30.35	32.36	31.18
kodak 21	29.92	29.66	28.64	31.84	30.30
kodak 22	30.76	30.06	29.67	31.40	29.37
kodak 23	32.49	33.18	31.66	32.45	30.32
kodak 24	28.95	29.14	27.34	30.65	29.30



original (kodak 1)



HQLI [3]



SSD [1]



SA [2]



CNLM-BF



CNLM



illustrating drawbacks: (left to right) original, baseline, CNLM-BF

Conclusion

Our method (CNLM-BF) quantitatively outperformed others
Fewer color artifacts than HQLI [3] and SA [2]
Better retention of detail than SSD [1]
May decrease vibrancy of small details

[1] Baudes, A., Coll, B., Morel, J. M., & Sbert, C. (2009). Self-similarity driven color demosaicing. IEEE Transactions on Image Processing, 18(10), 370-379.
[2] Li, X. (2005). Demosaicing by successive approximation. IEEE Transactions on Image Processing, 14(3), 370-379.
[3] Malvar, H. S., Ha, L. W., & Cutler, R. (2004, May). High-quality linear interpolation for demosaicing of Bayer-patterned color images. In 2004 IEEE International Conference on Acoustics, Speech, and Signal Processing (Vol. 3, pp. II-465). IEEE.