

Study of the effectiveness of adaptive interpolation algorithms for hierarchical image compression

A.N. Beden'gov¹, M.V. Gashnikov¹

¹ Samara State Aerospace University

Abstract

The paper estimates the efficiency limit of adaptive interpolation schemes used in the technology of hierarchical image compression. A new adaptive interpolation algorithm is proposed, based on the use of several interpolation functions and a parameterized rule for switching between them. The developed interpolation algorithm is compared with the existing ones.

Keywords: image compression, interpolation algorithm, adaptive scheme, parameterized rule.

Citation: Beden'gov AN, Gashnikov MV. Study of the effectiveness of adaptive interpolation algorithms for hierarchical image compression. Computer Optics 2003; 25: 141-145.

[Access full text \(in Russian\)](#)

References

- [1] Aleksandrov VV, Gorsky ND. Image representation and processing: a recursive approach [In Russian]. Leningrad: "Nauka" Publisher; 1985.
- [2] Kortman CM. Redundancy reduction – A practical method of data compression. Proc IEEE 1967; 55(3): 253-263.
- [3] Gashnikov MV, Glumov NI, Sergeev VV. The method of image compression in operational remote sensing systems. Proceedings of the IX All-Russian Conference "Mathematical methods of pattern recognition" (MMRO-9-99) 1999: 160-163.
- [4] Gashnikov MV, Glumov NI, Sergeev VV. Compression method for real-time systems of remote sensing. Proc15th International Conference on Pattern Recognition 2000: 3: 232-235.
- [5] Efimov VM, Kolesnikov AN. Effectiveness estimation of the hierarchical and line-by-line lossless compression algorithms [In Russian]. Proc 3rd All-Russian Conference "Pattern Recognition and Image Analysis: new information technologies" 1997; I: 157-161.
- [6] Pratt WK. Digital image processing. 3th ed. New York: John Wiley and Sons Inc; 2002.
- [7] Gashnikov MV, Glumov NI, Sergeev VV. Adaptive interpolation algorithm for hierarchical image compression. Computer Optics 2002; 23: 89-93.