# Efficient coding of two-dimensional homogeneous regions with hierarchical image compression

*M.V. Gashnikov[1,2], E.V.Mazanova[1]*
*[1]Samara State Aerospace University (SSAU)*
*[2]Image Processing Systems Institute of RAS*

***Abstract:***

The paper proposes a method for increasing the efficiency of hierarchical image compression by eliminating two-dimensional regions with similar or gradient brightness from the coding process. An effective algorithm for searching such areas is proposed, and a modification of the general hierarchical compression scheme required to enable such an algorithm is considered. A computational experiment is performed to estimate the gain from using the developed algorithm in comparison with the basic method.

*Keywords*: two-dimensional homogeneous regions, image compression, coding process, gradient brightness, searching such areas, general hierarchical compression

*Acknowledgments*: This work was supported by the Russian-American program Basic Research and Higher Education (BRHE); Russian Foundation for Basic Research (RFBR), grant 04-01-96507, grant of the President of the Russian Federation No. 1007.2003.01.

*Citation*: Gashnikov MV, Mazanova EV. Efficient coding of two-dimensional homogeneous regions with hierarchical image compression. Computer Optics 2005; 27: 142-145.

Access full text (in Russian)

***References:***

[1] Alexandrov VV, Gorsky ND. A recursive approach: Image representation and processing [In Russian]. Leningrad: "Nauka Publisher"; 1985.
[2] Kortman CM. Redundancy reduction – A practical method of data compression. Proc IEEE 1967; 55(3): 253-263. DOI: 10.1109/PROC.1967.5479.
[3] Vasin YG, Bakareva VP. Recurrent adaptive compression algorithms using well-adapted local recovery functions [In Russian]. In Book: CAD Software. Gorky: "GSU" Publisher; 1978.
[4] Gashnikov MV, Glumov NI, Sergeev VV. Information technology for image compression in online remote sensing systems [In Russian]. Bulletin of the Samara Scientific Center of RAS 1999; 1: 99-107.
[5] Gashnikov MV, Glumov NI, Sergeev VV. Hierarchical image compression in real-time systems [In Russian]. Artificial Intelligence 2003; 3: 218-222.