

Temporal denoising algorithm with adaptive threshold for cooled thermal imaging optoelectronic systems

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In this paper presents the results of the developments of a recursive temporal noise reduction algorithm with an adaptive threshold for thermal imaging systems. This algorithm is designed to reduce the level of temporal noise based on the results of a sequence of images obtained using a thermal imaging channel. A mathematical model of algorithm is given, as well as the required amount of computing resources required for its hardware implementation in the FPGA. A few characteristics of a thermal imaging system with the development algorithm have been measured, and conclusions have been drawn about the positive effect of the algorithm on its NETD.

Keywords: temporal denoising, inter-frame processing, adaptive threshold, recursive algorithm, motion detector, infrared range, FPGA.

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