

Fast recursive computation 1D and 2D finite convolution

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Abstract

The paper considers the problem of finding an optimal approximation of a finite impulse response by a linear recurrence relation (LRR) of a given order. Estimates of the convolution computation complexity for various classes of LRR are provided. An algorithm for decomposing an arbitrary two-dimensional impulse response into a sum of divisible impulse responses is considered, and a generalization of the approximation method for the two-dimensional case is provided.

Keywords: 2D finite, computation convolution, linear recurrence relation, LRR, arbitrary two-dimensional impulse, approximation method.

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