Edge detection Using Combination of Decomposition Filter and Simplified Hyperbolic Tangent Filter

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October 30, 2023

Abstract

This paper presents a new combination of Decomposition Filters (DF) and Hyperbolic Tangent (HBT) based simplified directional operators for edge detection (ED). Conventional separable algorithms are limited in capturing the geometric features and non-separable filters eliminate these restrictions. The high-frequency band of the DF of proposed method achieves the edge information. A set of edge operators in the form of simple non-separable patterns for different scales, and orientations are applied on the edge information to capture linear edge structures and directions. While testing with ten natural images, this algorithm has improved performances in terms of reduced Mean Squared Error (MSE) in the reconstruction estimation measure. The performance measure compares the Simplified Gabor Wavelet (SGW) based ED.

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