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Relative reductive structure-aware regression filter

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Abstract

Structure-aware image smoothing is a challenging and significant technique to remedy the limitation of current edge-preserving smoothing filters for extracting the prominent structures. To improve the technique, we propose a novel structure-aware filter via bilateral kernel regression with a variational structure-kernel descriptor. First, the relative reductive texture decomposition is applied to construct the structure-kernel descriptor. Then, the descriptor is incorporated into the bilateral kernel regression to achieve an expected structure preservation output. Algorithmically, a close-form numerically iterative solver is exploited to achieve the efficient and effective implementation. At last, some experimental self-evaluations and visual applications are presented to demonstrate that our method leads to better performance than the state-of-the-art solutions.

Keywords:
Structure-aware filter, Edge-preserving smoothing, Structure-texture decomposition

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