

Edge-Preserving Regularizations for Tomography Reconstruction in Mesh Domain

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The purpose of the titled study was to implement the continuous edge-preserving regularization rooted from traditional discrete Total Variation (TV) regularization for iterative tomography reconstruction in mesh domain to suppress image noise accumulation with increasing iteration number and thus to stabilize the reconstruction while preserving edges in the reconstructed images.

In order to accomplish these aims the speaker and his group used reconstruction algorithms in mesh domains that employed TV priors applied in a continuous form. They established a continuous-to-discrete integral equation model for tomography projections and used it to derive edge-preserving regularization algorithm in mesh domain. A computationally efficient approach for the proposed continuous regularizations was derived for piecewise linear basis functions.