A restricted linearised augmented Lagrangian method for Euler’s elastica model.

Summary: A simple cutting-off strategy for the augmented Lagrangian formulation for minimising the Euler’s elastica energy is introduced. It is connected to a discovered internal inconsistency of the model and helps to decouple the tricky dependence between auxiliary splitting variables, thus fixing the problem mentioned. Numerical experiments show that the method converges much faster than conventional algorithms, provides a better parameter-tuning and ensures the higher quality of image restorations.

MSC:

65M55 Multigrid methods; domain decomposition for initial value and initial-boundary value problems involving PDEs
68U10 Computing methodologies for image processing
94A08 Image processing (compression, reconstruction, etc.) in information and communication theory

Keywords:
Euler’s elastica; augmented Lagrangian; image denoising

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References: