

Domain Decomposition for Total Variation Minimization

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Abstract:

We are interested in the application of domain decomposition methods to the minimization of functionals with total variation (TV) constraints. The main challenge of domain decomposition methods for TV minimization is that interesting solutions may be discontinuous, e.g., along curves in 2D. These discontinuities may cross the interfaces of the domain decomposition patches. These discontinuities may cross the interfaces of the domain decomposition patches. Hence, the crucial difficulty lies in the proper treatment of interfaces: we need both the preservation of crossing discontinuities and correct patching where the solution is continuous. In this talk we will present recent results on this task using an iterative proximity-map algorithm which is implemented via the so called oblique thresholding. Specifically, we will discuss its application for TV-image inpainting. For more information see

http://homepage.univie.ac.at/carola.schoenlieb/webpage_tv_dode/tv_dode_numerics.htm