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Wei Zhu* (wzhu7@ua.edu). *Fast algorithm for novel image denoising models using L^p -norm of mean curvature.*

In this talk, we will discuss a new class of imaging denoising models by using the L^p -norm of mean curvature of image graphs as regularizers with $p \in (1, 2]$. The motivation of introducing such models is to add stronger regularizations than that of the original mean curvature based image denoising model in order to remove noise more efficiently. To minimize these variational models, we develop a novel augmented Lagrangian method, and one thus just needs to solve two linear elliptic equations to find saddle points of the associated augmented Lagrangian functionals. Specifically, we linearize the nonlinear term in one of the two subproblems and minimize a proximal-like functional that can be easily treated. We prove that the minimizer of the substitute functional does reduce the value of the original subproblem under certain conditions. Numerical results are presented to illustrate the features of the proposed models and also the efficiency of the designed algorithm. (Received January 22, 2019)