Seminar

Friday May 11, 4:30

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A Fast Algorithm for Euler's Elastica Model using Augmented Lagrangian Method

Minimization of functionals related to Euler's elastica energy has a wide range of applications in computer vision and image processing. An issue is that a high order nonlinear partial differential equation (PDE) needs to be solved and the conventional algorithm usually takes high computational cost. We propose a fast and efficient numerical algorithm to solve minimization problems related to the Euler's elastica energy and show applications to variational image denoising, image inpainting, and image zooming. We reformulate the minimization problem as a constrained minimization problem, followed by an operator splitting method and relaxation. The proposed constrained minimization problem is solved by using an augmented Lagrangian approach. Numerical tests on real and synthetic cases are supplied to demonstrate the efficiency of our method. Comparisons with the CKS scheme are given.
Joint work with JOOYOUNG HAHN AND GINMO JASON CHUNG