

First Joint Meeting Brazil Italy of Mathematics Special Session: Variational Methods and PDE in Imaging

Rio de Janeiro, August 29 - September 02, 2016

Title: A numerical approach to the minimization of an elliptic approximation of the Blake-Zisserman functional

Authors: Massimo Zanetti, Valeria Ruggiero, Michele Miranda Jr

Abstract: The 2nd-order model for segmentation by Blake-Zisserman is outperforming compared to the well-known Mumford-Shah. However, its numerical treatment is so far considered only for very small images because of inherent computational burden. We address the numerical minimization of a variational approximation of the functional given by Ambrosio, Faina and March, by an efficient block-coordinate descent method that exploits a compact matrixial formulation of the objective functional and its decomposition into quadratic sparse convex sub-problems. Results show that 2nd-order segmentation can be addressed in competitive time also for large images.