Transport metrics in image and shape processing

Convex Color Image Segmentation with Optimal-transport Distances

Nicolas Papadakis

CNRS, IMB, UMR 5251, F-33400 Talence, France

nicolas.papadakis@math.u-bordeaux.fr

Abstract: This work concerns the histogram-based segmentation of a color image in two regions. In the considered framework, fixed exemplar histograms define a prior on the statistical features of the two regions in competition. We investigate the use of regularized transport-based cost functions as discrepancy measures between color histograms and consider a spatial regularization of the segmentation map with total variation. We finally rely on a primal-dual algorithm to solve the obtained convex optimization problem. Experiments illustrate the robustness of the proposed method for the segmentation of natural color images.
This is a joint work with Julien Rabin from Université de Caen, GREYC.