

Postdoctoral Opportunity: Multivariate image labeling

Context and methodology

This postdoctoral position will focus on multivariate image labeling and more specifically on the Potts/Mumford-Shah piecewise constant/smooth approximation problem [1]. Based on some advances in nonsmooth convex optimization, efficient algorithmic solutions can be provided for dealing with this labeling issue [2, 3]. However, several open theoretical questions are related to this problem and will be investigated during this postdoctoral work. The theoretical results obtained could be tested on different questions investigated in ENSL Physics Lab, for instance :

- Segmentation of textured images;
- Graph labeling;
- Video labeling.

Applicant profile

Candidates should have a strong background in convex optimization, a good publication record and experience in image labeling (using MATLAB, Python or C). Proficiency in English (oral and written) is essential, as well as scientific writing skills.

Applicants should send a CV, including list of publications and a description of previous research experience, as well as the names and addresses of two academic referees, to: **Dr. N. Pustelnik** (nelly.pustelnik@ens-lyon.fr) and **Dr. L. Condat** (laurent.condat@gipsa-lab.grenoble-inp.fr).

Conditions

- Date: january 2016
- Contract: 1 year
- Situation: Laboratoire de Physique ENS de Lyon
- Salary: related to experience

References

- [1] D. Mumford and J. Shah, “Optimal approximations by piecewise smooth functions and associated variational problems.,” *Comm. Pure Appl. Math.*, vol. 42, pp. 577–685, 1989.
- [2] A. Chambolle, D. Cremers, and T. Pock, “A convex approach to minimal partitions,” *SIAM J. Imaging Sci.*, vol. 5, no. 4, pp. 1113–1158, 2012.
- [3] L. Condat and N. Pustelnik, “Segmentation d’image par optimisation proximale,” in *Proc. GRETSI*, Lyon, France, 8-11 Sept. 2015, pp. x+4.