Simultaneous Cartoon and Texture Inpainting

Jian-Feng Cai   Raymond Chan   Zuowei Shen

Two minimization formulations were proposed in [Elad et.al. ACHA 05] to solve inpainting problems using two separate systems A_1 and A_2, where A_1 can sparsely represent cartoons (the piecewise smooth part of the images) and A_2 can sparsely represent textures (the oscillating pattern part of the images). An iterative algorithm is given there to find the minimizer of one of the formulations but there is no convergence proof. In this talk, we suggest a third minimization formulation motivated by our earlier work in framelet-based minimization for inpainting problems. For all three minimization formulations, we derive iterative algorithms to find their minimizers and prove their convergence. While we are unable to prove the convergence of the algorithm proposed in [Elad et.al. ACHA 05], we give the relationship between that algorithm and one of ours.