2015

Fast Algorithm to Minimize model CombiningDynamically Local and Global Fitting Energy for Image Segmentation

Yamina BOUTICHE

Abstract : Segmentation by using region-based deformable models has known a great success and large domain of applications. In this paper, we propose a fast algorithm to minimisemodel which combines local fitting energy and global fitting energy. The minimisation via the proposed algorithm avoids solving any Partial Differential Equation PDE. Consequently, there is no need to any stability conditions. Furthermore, owing to the fast convergence we don't need to the re-initialisation step and the term that keeps Level Set LS as Signed Distance Function SDF. In addition, we have used a dynamic function to adjust between the local and global energies. Successful segmentation results are obtained on synthetic and real images with a great saving of CPU time compared to the minimisation via gradient descent method.

Keywords : image segmentation, region-based model, Level set, hybrid models, sweeping, fast convergence