

Interactive Random-Walk-Segmentation of medical 2d digital images in ImageJ

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Abstract

Interactive segmentation of medical images and their evaluation is time consuming and can be reduced considerably by semi-automatic methods. The bachelor thesis deals with the Random-Walker as a segmentation method of two-dimensional images. The idea was researched by Leo Grady and published in 2006 in his article "Random Walks for Image Segmentation" [1]. For that purpose a prototype has been implemented in Java and embedded in *ImageJ* as a plug-in. The Random-Walk's precision will be measured by the Dice-Coefficient as well as the Hausdorff-Distance. Interactive segmentations have been prepared and verified by an expert to compare them with the computed results. The results prove that the method creates basically very good segmentations. But according to the image quality and object characteristics it strongly depends on the distribution of the seeds.

References

- [1] L. Grady, "Random Walks for Image Segmentation" *IEEE Trans. on Pattern Analysis and Machine Intelligence.*, vol. 28, no. 11, pp. 1768-1783, November 2006.