

Figure 1. Left: The external force (solid arrows) may be deficient in the normal direction of the deformable model (vertical straight line) near significant concavities. Right: $\text{sgn}[M(\mathbf{x})]\mathbf{N}(\mathbf{x})$ (empty arrows) is a pressure force that is automatically adaptive to the need for inflation or deflation.

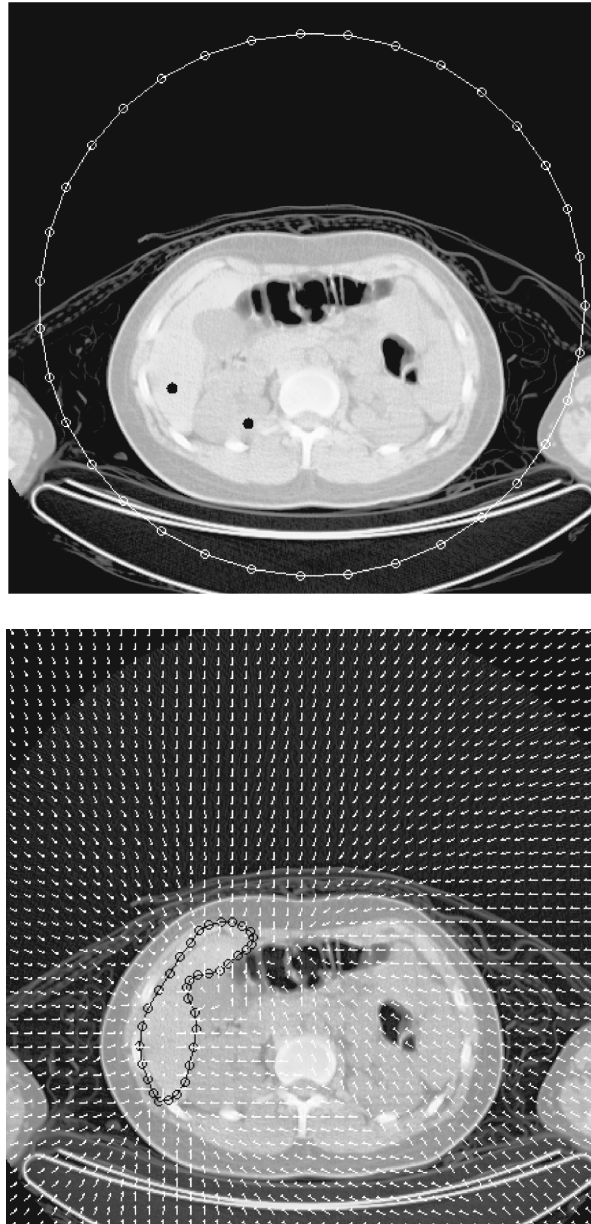


Figure 2. Experiments with a PDM on a CT image. Top: the image, the initial model (large white circle), and the two markers (black dots) that are use to respectively identify the target and non-target background. Bottom: The globally consistent external force field (white arrows) and the resultant segmentation (black contour).

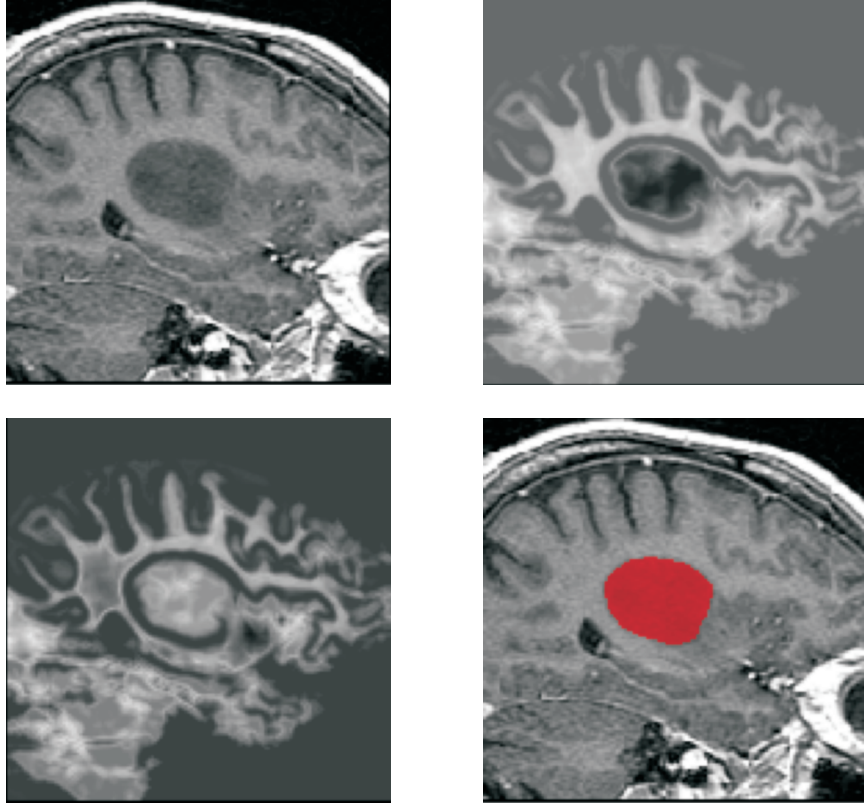


Figure 3. Brain tumor segmentation using the GAC level set model on a T1-weighted MR image. Top left: cropped original brain MR image; top right: GTD transform from the object marker; bottom left: GTD transform from the background marker; bottom right: a segmentation of the brain tumor displayed as the overlay on the original image.

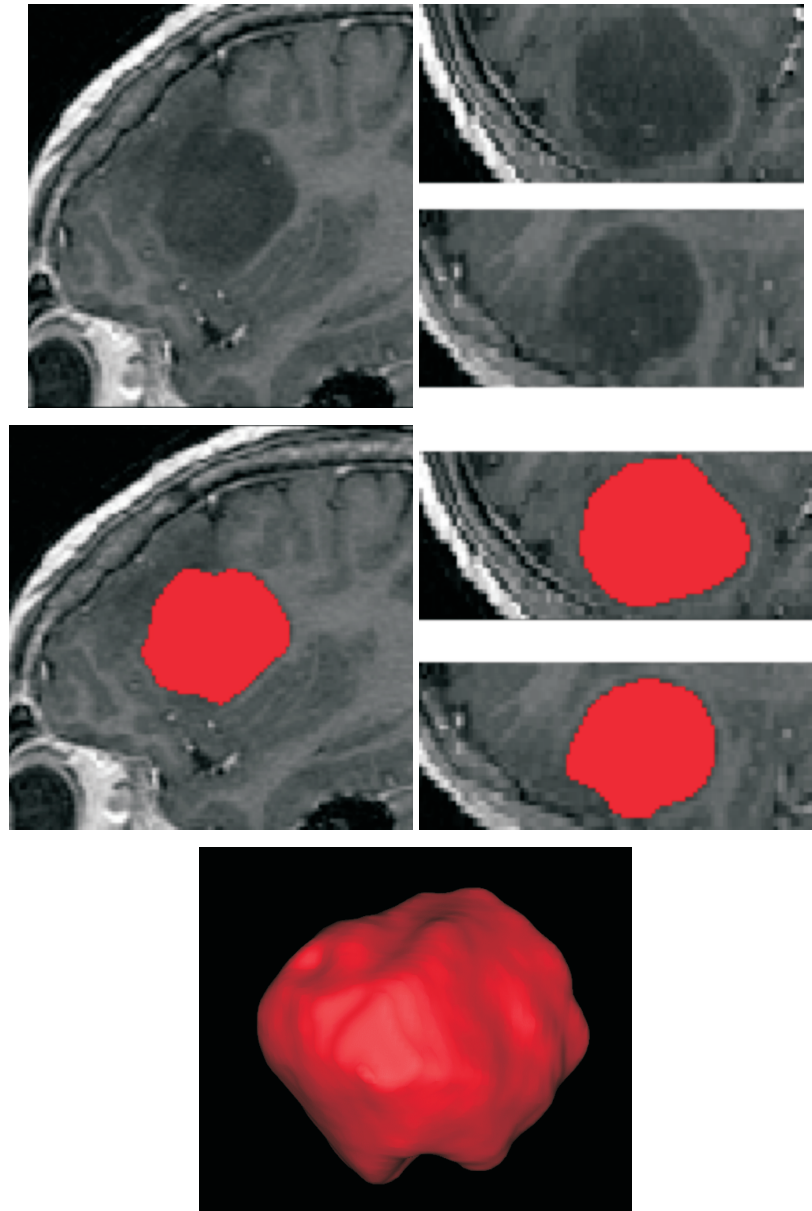


Figure 4. Example of brain tumor segmentation using the GAC level set model. Top left: axial slice view of an original T1-weighted MR image of the brain; top right: coronal (above) and sagittal (below) views of the original image; middle left: the segmentation superimposed on the axial slice view; middle right: the segmentation superimposed on coronal (above) and sagittal (below) views of the original image; bottom: a 3D view of the segmented tumor.

CHAPTER 9: TOWARD CONSISTENTLY BEHAVING DEFORMABLE MODELS

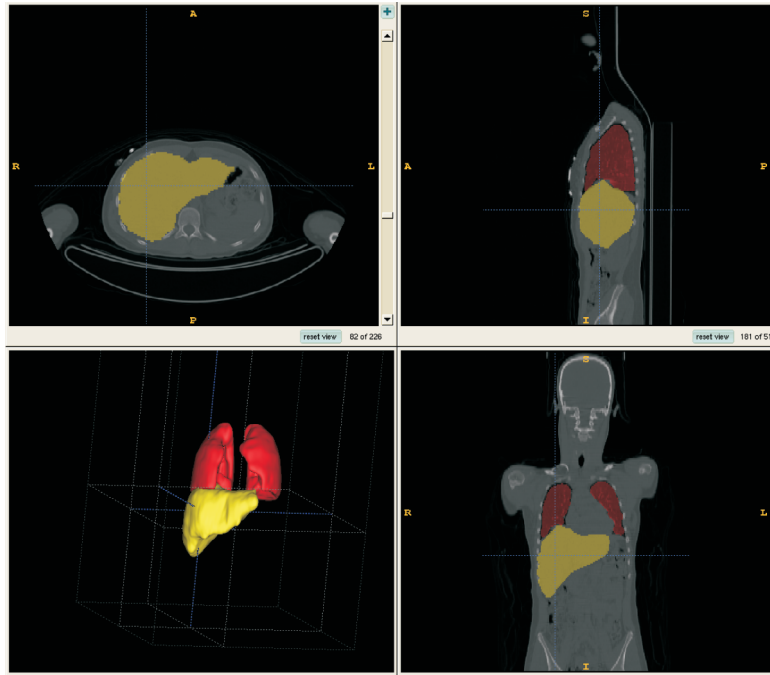


Figure 5. Example of lung and liver segmentation employing the GAC level set model on CT images, with the results displayed using ITK-SNAP software [40].

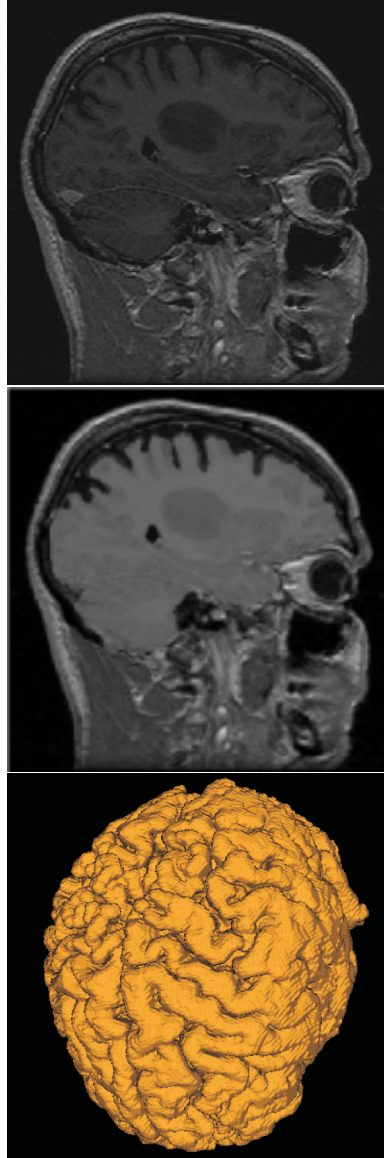


Figure 6. Example of brain segmentation using the GAC level set model. Top: an original T1-weighted MR image of the brain. Middle: a slice of the segmented brain (white overlay). Bottom: a 3D view of the segmented brain.

CHAPTER 9: TOWARD CONSISTENTLY BEHAVING DEFORMABLE MODELS

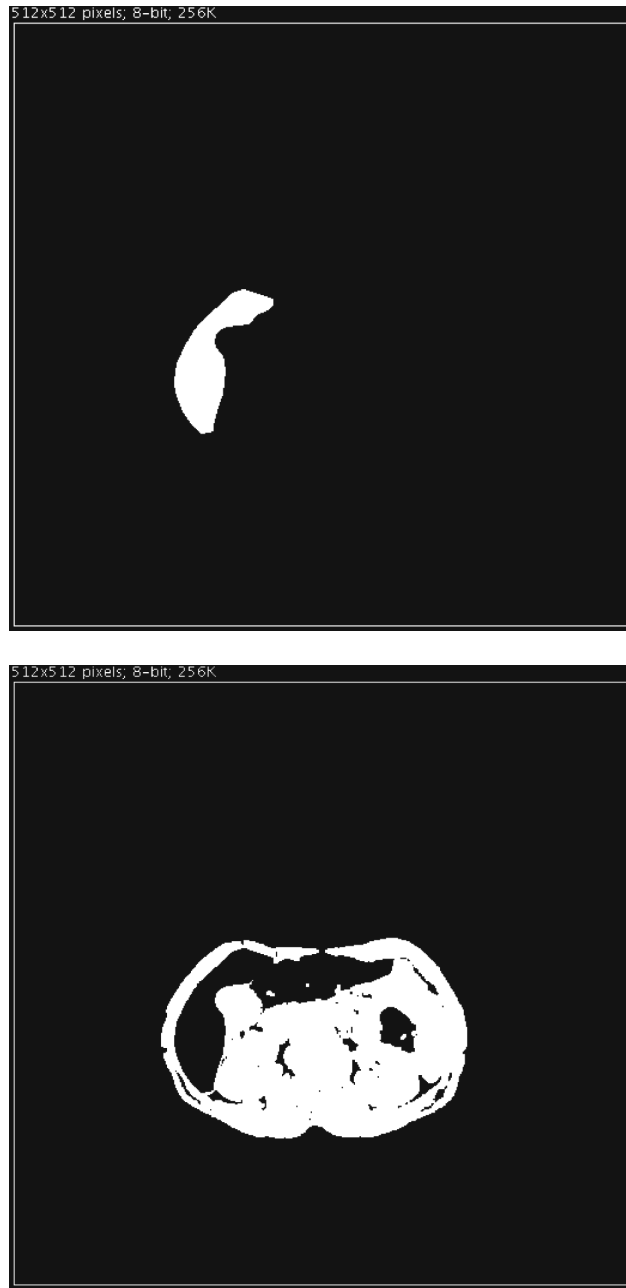


Figure 7. Top: manual segmentation used as the ground truth. Bottom: background mask in which a background identifying marker is randomly placed.



Figure 8. Examples showing where a potential background marker should be placed in order for it to make a useful contribution to segmentation of the liver. That is, it should be put in one of the places indicated by the white dots.

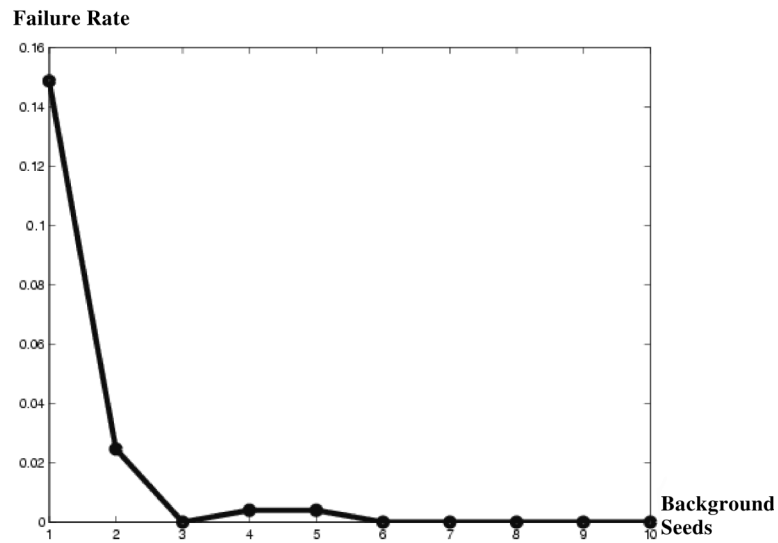


Figure 9. Failure rate as a function of the number of seeds used.