BMI/CS 567: Medical Image Analysis © Spring 2020

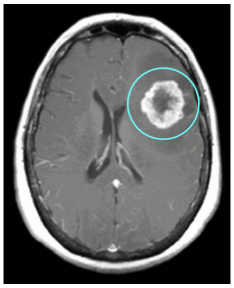
Homework 4: Morphology Segmentation

Instructor: Daniel L. Pimentel-Alarcón Due 04/09/2020

GO GREEN. AVOID PRINTING, OR PRINT 2-SIDED MULTIPAGE ;)

4.1 Segmentation

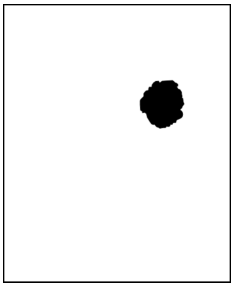
Use any combination of the segmentation techniques we have studied in class (region growing, erosion, dilation, thresholding, etc.) to segment the metastatic tumor highlighted in the following brain MRI:



You can find this MRI (`metastatic.jpg`) on the course website. Aside from the techniques we have studied in class, you may also use any other technique you want (e.g., something you find on a book, research papers, the internet, or something you come up with), but you must explain such technique clearly, where you got it from, and why you chose to use it. Hand in your code and your segmentation.

4.2 Evaluation

On the course website you can also find the file `ground_truth.png`, which contains the hand-segmented tumor:



(a) Compute the Hausdorff distance between your segmentation and the ground truth.

(b) Compute the Dice coefficient between your segmentation and the ground truth.