

## Assignment: RECIST

Due Monday, 12/2/2019 by 11:59 pm

**Complete the deliverables listed below and upload to Canvas.**

**Please upload each file separately (i.e., don't compress them or make a .zip file)**

- Matlab m-file with code to answer the following questions
- A report (saved as a pdf) of answers and figures (if necessary) to support your answer
- Make sure each plot/figure has a title, labeled axes, and is displayed in the correct aspect ratio.

Today, we will be examining 2 patients who have been diagnosed with breast cancer and are undergoing treatment. I have uploaded 2 files for each patient. We will use the enhancement maps to segment (in 3D) tumors from each patient, and determine their prognosis using the RECIST criteria, below

### RECIST criteria:

**Complete Response:** Disappearance of all target lesions

**Partial Response:** at least 30% decrease in longest dimension

**Stable Disease:** Neither Partial Response nor Progressive disease

**Progressive Disease:** at least 20% increase in longest dimension

### Dataset:

"resolution" resolution(1) = x-dir, resolution(2) = y-dir, resolution(3) = z-dir

"Patient\_T1.enhance" = time 1's enhanced MRI data

"Patient\_T2.enhance" = time 2's enhanced MRI data

- (1) (10 points) For each patient, display the image slices with tumors, with your ROI displayed on top of it (Hint: Matlab Monday 0). (Save your ROIs as a ". mat" and submit them).**
  - Discuss how you determined what was cancerous from healthy tissue. (What were your assumptions)
- (2) (20 points) Create/code up a RECIST function that returns the longest dimensions at each time point, and the RECIST criteria (CR, PR, SD, PD).**
- (3) (20 points) Calculate patient response:**
  - Report the RECIST criteria for each patient
  - Report the percent volume change
  - Discuss the strengths and weaknesses of using RECIST as a standard method for determining disease prognosis
  - How do you think your results will compare with the rest of the class?