

# Two-dimensional Radiation induced Acoustic Computed Tomography (RACT2D)

The shared folder contains three folders:

- 1) GUI\_Installers
- 2) Data
- 3) RACT2D\_Codes

## 1) GUI\_Installers

This folder contains two installer files:

### *a) RACT2D\_needs\_MATLAB*

The GUI installed from this file uses the parallel computation capability ('parpool') and hence needs MATLAB to be installed on the system.

### *b) RACT2D\_WO\_MATLAB*

The GUI installed from this file does not employ the parallel computation and hence MATLAB is not needed for using it.

## 2) Data

This folder contains three .mat files:

### *a) P\_mmt\_blood\_vessel\_20MHz\_128ele\_ring*

This contains a variable 'P\_mat' of size 128 (# of detectors) x 1082 (# of time samples). This contains the synthetic acoustic measurements from a vascular structure (Sampling frequency: 20 MHz).

### *b) T\_shape\_XACT\_Exp*

This also contains a variable 'P\_mat' of size 128 (# of detectors) x 2700 (# of time samples). This contains the experimental XACT measurements from a 'T' shaped phantom (Sampling frequency: 40 MHz).

Both these datasets can be used by the user to evaluate reconstructions using the GUI and the code.

### *c) ExpRingArrayCords*

This folder contains the variable 'det\_cords' (size: 128 x 2 - columns 1 and 2 carry the x and y coordinates of the detectors). The GUI can generate the detectors co-ordinates for elements in a ring-

array if the users provide the radius. Alternatively, the users can also load a .mat file like this, which has the variable 'det\_cords' containing the x and y co-ordinates of the detectors.

### **3) RACT2D\_CODES**

This folder has two subfolders:

#### *a) MainCode*

This contains the MainCode that user can use to evaluate the backprojection and model-based reconstructions. The user needs to enter/load the data/parameters in the MainCode.

#### *b) Functions*

This folder contains all the functions used in the MainCode for evaluating reconstructions.