

# **BraTS-CEST**

**Tutorial of MATLAB GUI**

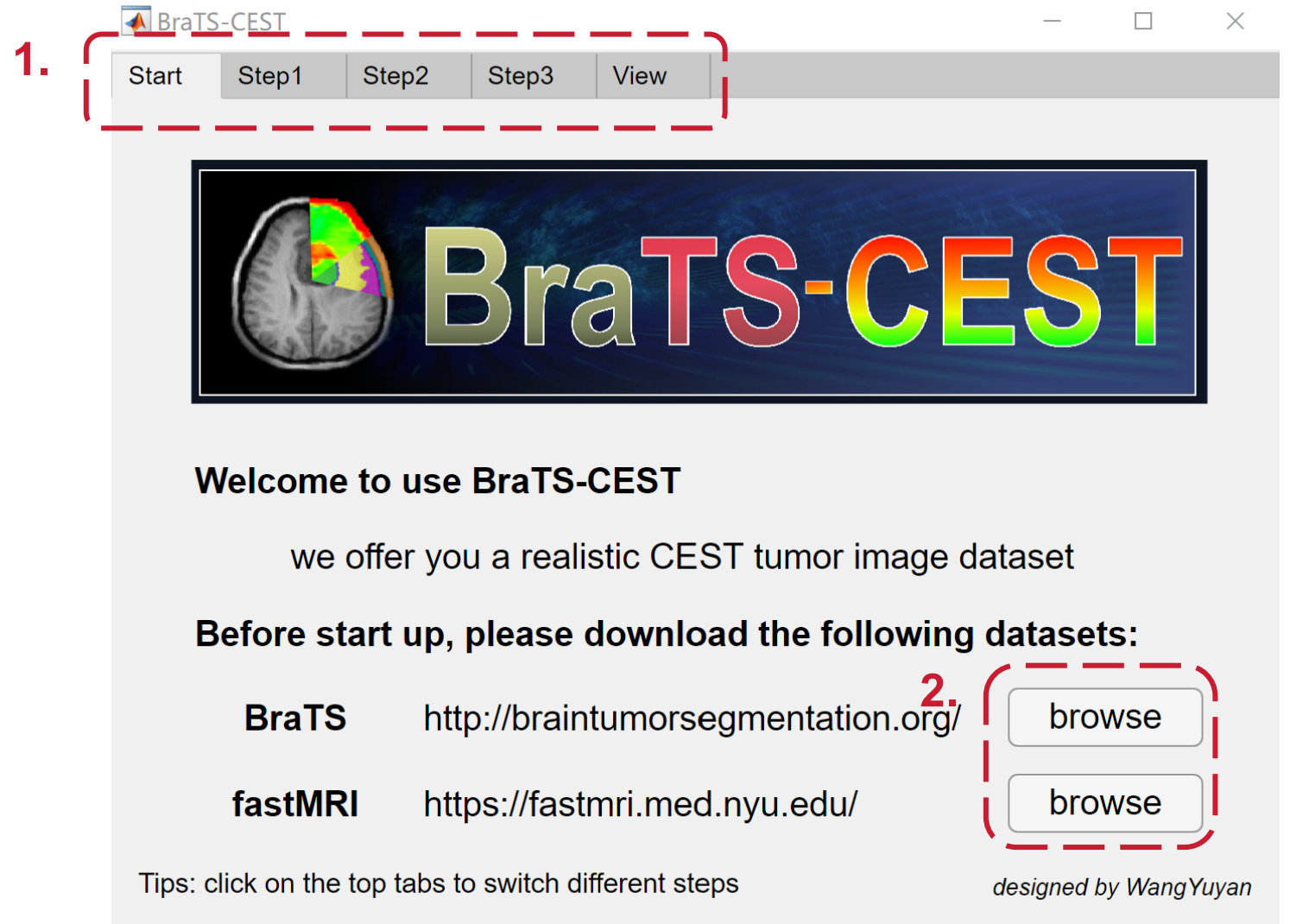
## Setup: dependent libraries

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- ❑ **Libraries from third parties** have been packed into executable file of BraTS-CEST:
- ❑ Please make sure you have the following official toolboxes installed:
  - **Image Processing Toolbox**
  - **Curve Fitting Toolbox**
  - **Partial Differential Equation Toolbox**
- ❑ For better performance, we highly recommend **Parallel Computing Toolbox**.

# GUI: Start

1. Click the **Step Tab** above to select the synthesis step.
2. Click the **browse button** to jump to the corresponding web page.



# GUI: Step1

1. Click the **choose** button or enter the **path of fastMRI .h5 rawdata** directly in the **text box**.
2. Select the **data num** to be converted.
3. Select **data size** after converting.
4. Click the **Run** button to start.

The screenshot shows the 'Step1' tab of the BraTS-CEST application. The title bar reads 'BraTS-CEST'. The interface is titled 'Pre-process of fastMRI dataset to .mat file'. It contains several input fields and buttons, with red dashed boxes and numbers 1 through 4 highlighting specific areas as per the instructions on the left.

**Pre-process of fastMRI dataset to .mat file**

1. fastMRI folder:    
mat save folder:

**Presettings:**

2. data num:

image size:

3. num of slices:  num of coils:

processing data: 3/10 est. time: 01:42

4.

Tips. rawdata that does not meet the minimum condition will be skipped

## GUI: Step2

1. Click the **choose button** or enter the **path of BraTS .nii rawdata** directly in the **text box**.
2. Select the **patient num** to be converted.
3. Select the **interval between slices** (e.g. a BraTS data with 20 slices, set interval 5 will convert it to 4 slices).
4. Select the **minimum region voxel size** of slice (slice that do not meet the requirements or marked as defective in **BraTS2020\_QC.xlsx** will be skipped).
5. Click the **Run button** to start.

The screenshot shows the 'BraTS-CEST' application window at 'Step2'. The title bar includes a close button and standard window controls. The interface has a tabbed menu with 'Start', 'Step1', 'Step2' (active), 'Step3', and 'View'. The main heading is 'Transfer BraTS from real to complex'. Below this, five numbered steps are highlighted with red dashed boxes: 1. 'BraTS folder' and 'complex folder' selection with 'choose' buttons. 2. 'patient num' spinner set to 50. 3. 'slice interval' spinner set to 5. 4. 'brain size' spinner set to 1000 and 'lesion size' spinner set to 144. 5. A large 'Run' button. A progress bar shows 'processing data: 17/50 est. time: 06:57' with a green bar indicating progress. A tip at the bottom states: 'Tips. rawdata that are recorded as defective will be skipped'.

BraTS-CEST

Start Step1 Step2 Step3 View

### Transfer BraTS from real to complex

1. BraTS folder    
complex folder
2. patient num
3. slice interval
4. brain size  lesion size
5.

processing data: 17/50 est. time: 06:57

Tips. rawdata that are recorded as defective will be skipped

# GUI: Step3

1. Click the **choose button** or enter the **BraTS-CEST save path** of directly in the **text box**.
2. Select the **patient num** to be converted.
3. Select **image size** after converting.
4. Turn rigid transformation **data enhancement** and **T2 blur** imitating TSE On or Off.
5. Select the **region of CSM** to cover full FOV or not.
6. Click the **Run button** to start.

BraTS-CEST

Start Step1 Step2 Step3 View

### Add CEST contrast for multi-coil BraTS-CEST data

1. CEST save folder
2. patient num
3. image size
4. data enhance Off ☐ On  
TSE T2 blur Off ☐ On
5. region of CSM  
☒ full FOV ☐ partial FOV
6.

processing data: 3/50 est. time: 53:30

Tips. choose full FOV of CSM for better performance on training

# GUI: View

1. Select the **patient id** and **modality** to be viewed.
2. Click the **Load button** to start

