Labeling System Guideline

I. Introduction

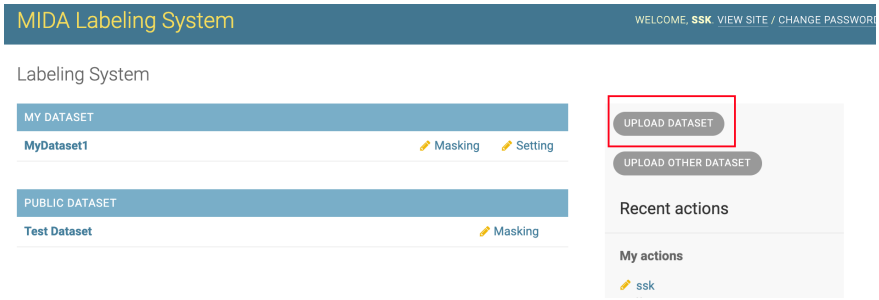
MIDA Labeling System is an open platform to create various labels of breast tumor ultrasound images. It eases the labeling process of creating BI-RADS diagnosis, masking breast tumor, cropping image, and segmenting tissues for breast tumor ultrasound images.

People can upload datasets to create labels and collaborate labeling with other researchers and medical doctors. Also, it's possible to join and help the labeling work on the datasets shared by other users. Sharing your datasets to get help on labeling and taking advantages from open access datasets uploaded and labeled by other researchers.

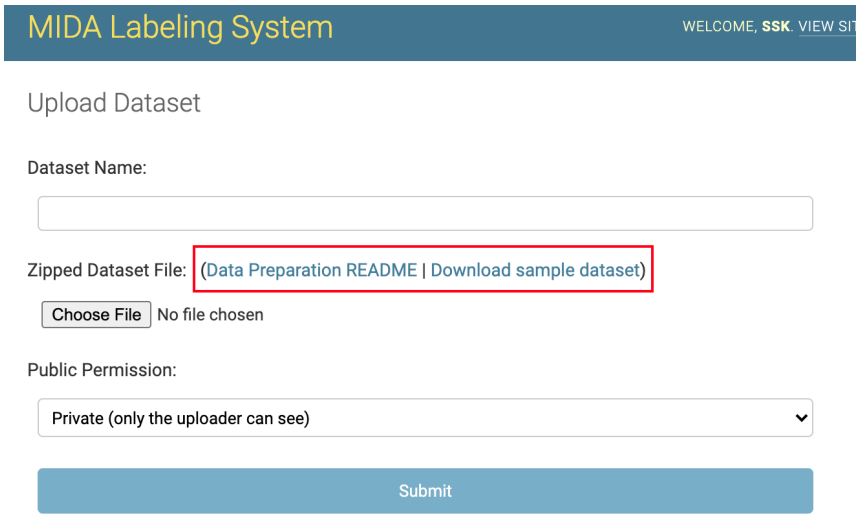
MIDA Labeling System simplifies the labeling process and allows collaborative work with other users.

II. Upload dataset

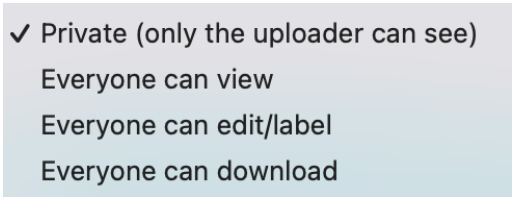
After creating an account, you can start to upload your own dataset. By clicking the "UPLOAD DATASET" button at the home page to start creating a dataset.



To create a new dataset, you need to address a dataset name first, and then select the zipped dataset file. Please look at "Data Preparation README" to understand how to organize your dataset. There also has a sample dataset provided for downloading.

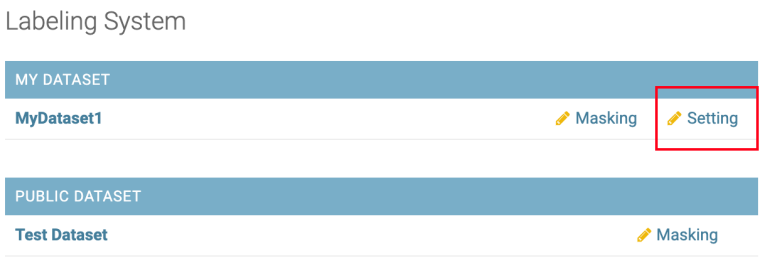


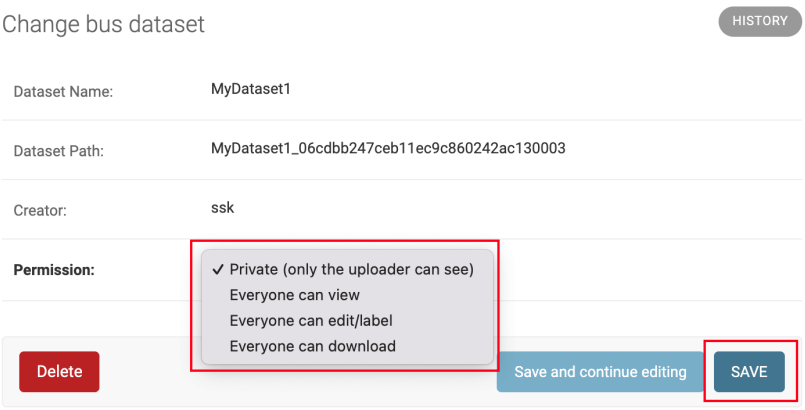
You must choose one permission from four available options.



Private: only the uploader can see and operate
Everyone can view: everyone can view but cannot do any operation
Everyone can edit/label: everyone can create labels but cannot export labels or images
Everyone can download: open all permissions for public, everyone has full access to edit/download labels and images

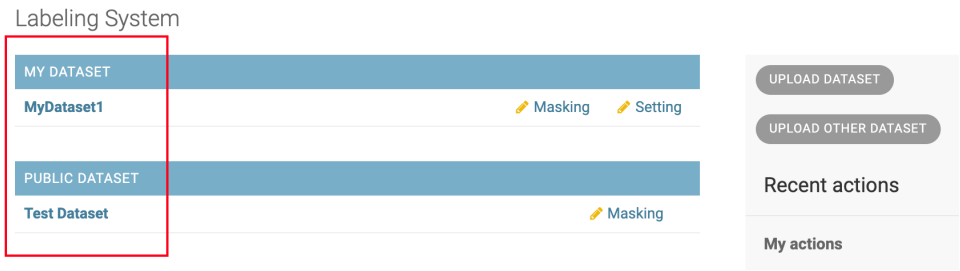
You can change the permission after upload by clicking “Setting” button.



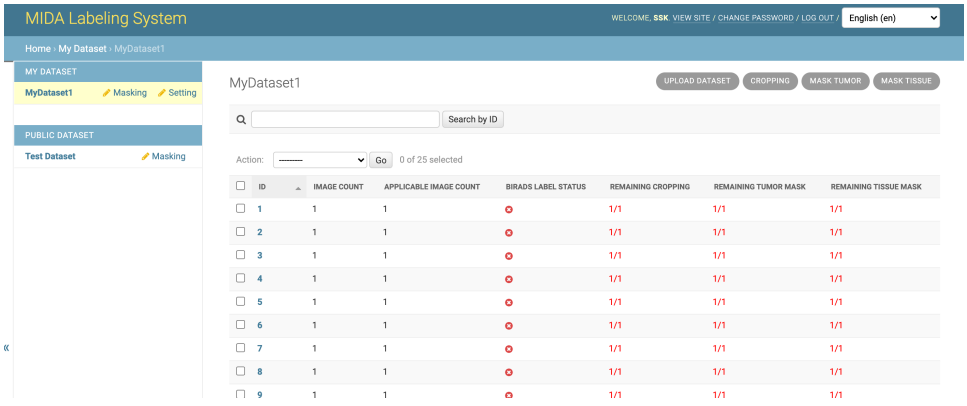


III. Label dataset

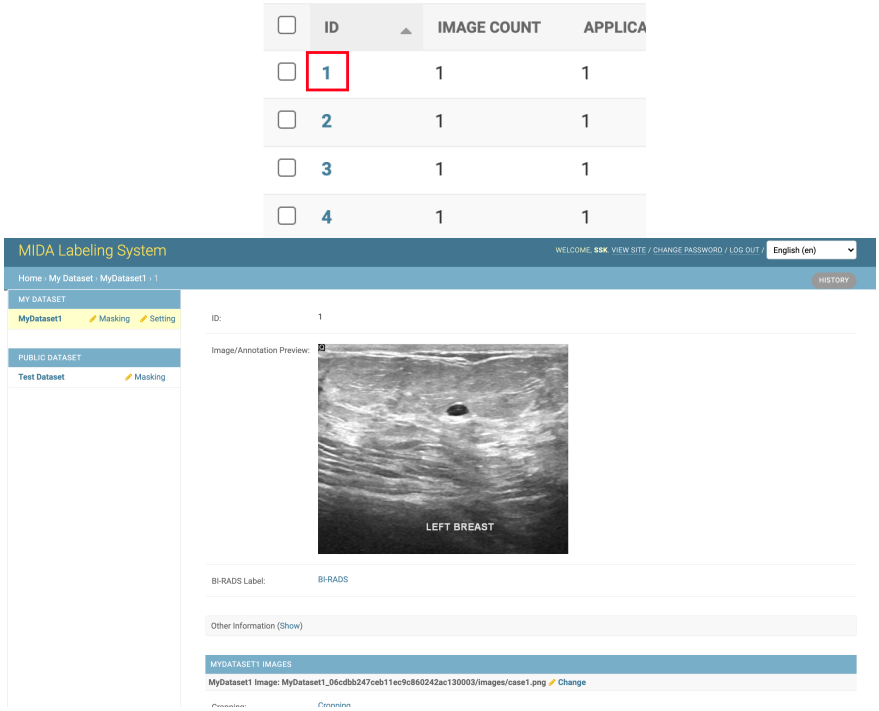
You could label your datasets or public datasets that uploaded by other users. All available datasets will be displayed in the home page.



Clicking the dataset name to browse a dataset:

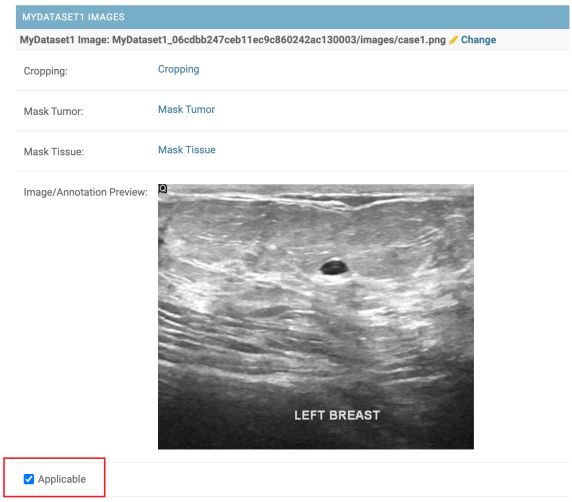


Clicking an ID to go to a case detail page:



i. Set availability of images

For a specific case, it may contain multiple images, e.g., ultrasound images captured from different angles, doppler images or other kind of images. The first step is to set image availability for each image by setting the “Applicable” checkbox in case detail page:



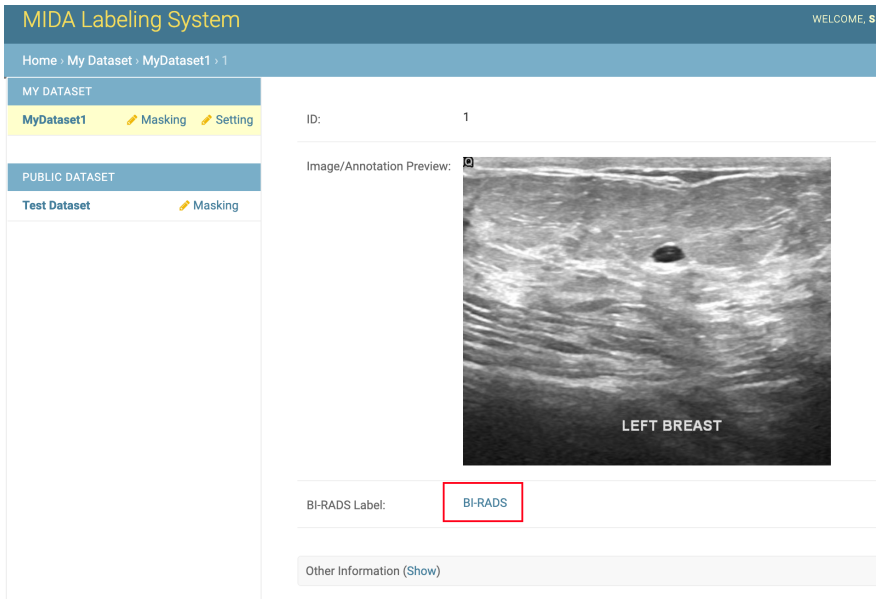
For example, your dataset has mixed doppler and ultrasound images and the research topic only intend to use ultrasound images. You should unselect

"Applicable" for all doppler images to indicate the availability. In other case, if an image is undesired for your research, such as fuzzy or incomplete, you can also unselect "Applicable" to rule it out from the further labeling processes.

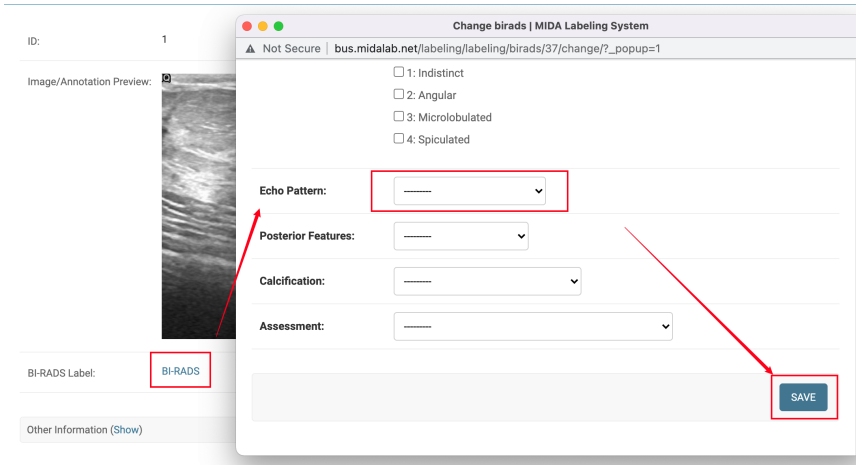
The inapplicable images won't be deleted from disk but only won't appear in the masking sequence.

ii. Create BI-RADS label

In case detail page, click the "BI-RADS" button to start labeling.

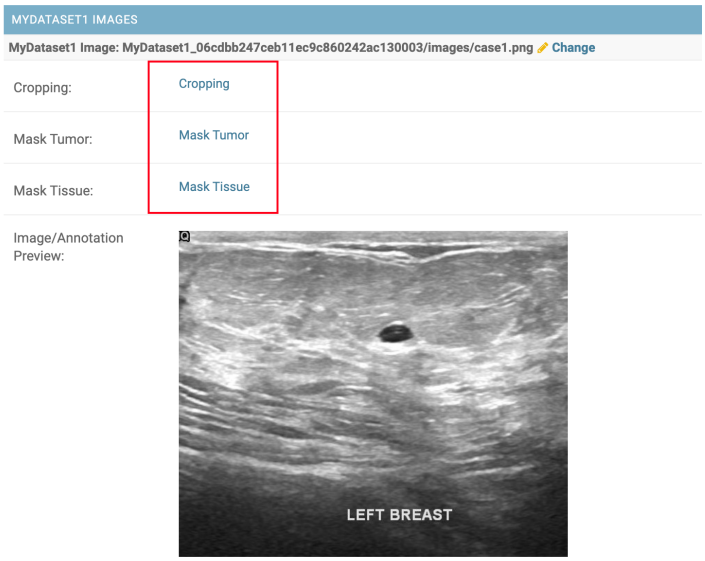


After clicking, a pop-up window will appear:

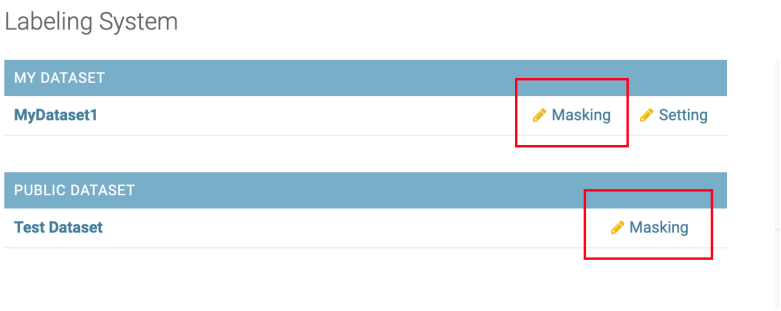


iii. Crop and mask tumor/tissue on images

There have two entries to start image cropping/tumor masking/tissue masking. The first way is in case detail page, clicking the button will start to mask:

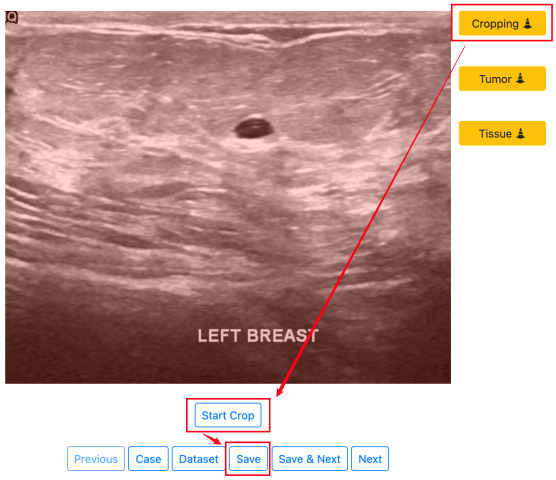


Or you could click the “Masking” button after a dataset name to start labeling:

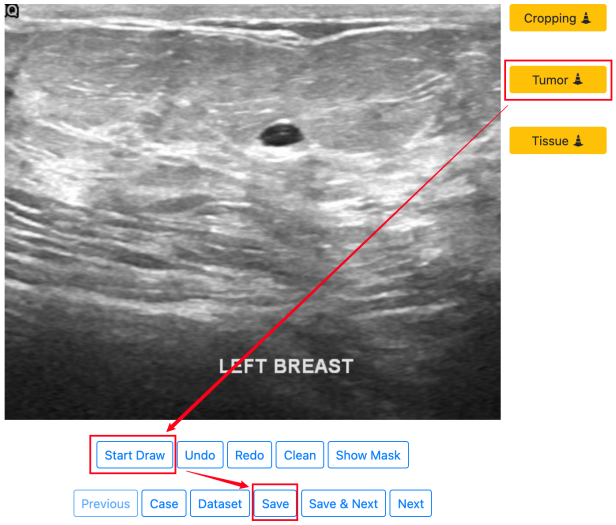


By clicking “Masking” button, you will start from the first unlabeled applicable images in the masking sequence.

To crop an image, click “Cropping” → “Start Crop”, then dragging your mouse with left button down from the top-left to right-bottom of the image to select desired region:

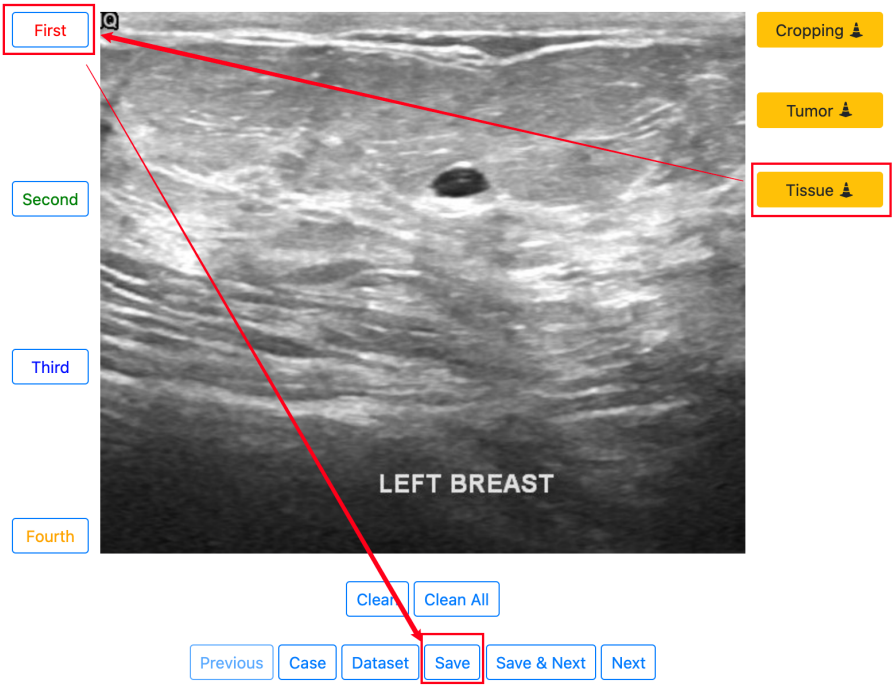


To mask tumor, click “Tumor” → “Start Draw”, then dragging your mouse with left button down to outline the tumor area.



While masking, please keep strokes clockwise.

To mask tissue, click “Tissue” → “First” or “Second/Third/Fourth”, then dragging your mouse with left button down from left to right horizontally to segment the image:

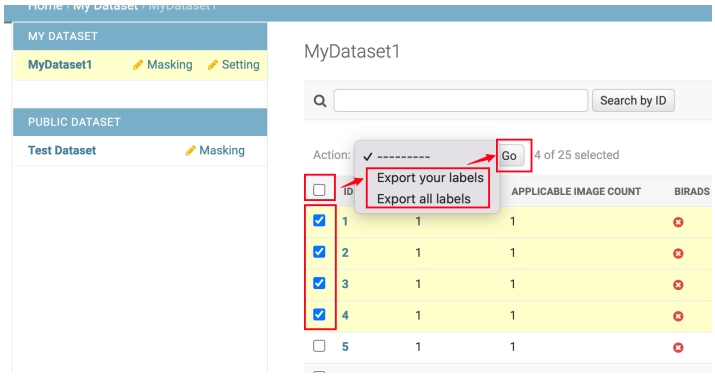


Be sure to drag from left to right always.

You can click “Save” button to save your label, then click “Next” to continue with next images in the masking sequence, or just simply click “Save & Next” to do two steps in one click.

IV. Export dataset

Select cases (or select all) you want to export → Choose “Export your labels” or “Export all labels” in action drop-list → Click “Go” to download



“Export your labels” will export labels created by your account. “Export all labels” will export labels created by all users (includes your labels).