An Interactive Segmentation Method for Thermal Breast Images
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In this study, a segmentation method facilitated by a graphical user interface (GUI) was developed to automatically extract the region of interest. The GUI allows the user to run the segmentation algorithm and adjust various parameters.

The aim of this study is to help reduce the efforts inaccuracies of segmenting these regions along addressing some of the inherent limitations that users face when designing automatic segmentation methods, such as lack of clear edges.

DATA/MATERIALS
This study is a series of thermal imaging for four women volunteers. All confidential data were anonymized prior to review.

The images were acquired using an infrared Imaging Systems, Irvine, Calif. (960 pixels, 30mK sensitivity).

networks, Inc.) was used to write all image segmentation procedure; cited in parentheses.

REFERENCES

METHODS

1. Pre-Processing: Use On the method to eliminate background (graythresh) and increase contrast using (imadjust).

2. Apply Filter: Use detect edges to generate edges

3. Edge Linking: Connect the broken edges in the image using (imclose).

4. Visual Inspection: If the user identifies any incorrect boundary pixels then proceed on to next step; otherwise move to Step 6.

5. Apply Edge Removal Algorithm: This algorithm removes any small connected edges with fewer than x pixels. Sliders are implemented in the GUI so the user can adjust x.

6. Recheck: Once the Algorithm is applied the user can select “Segment” in the GUI. The GUI will not segment, however, until there are at least four edges in the filter.

7. If there are more than four edges this means that there are edges in addition to the breast and body boundary. The user must go back to run the edge removal algorithm in Step 5.

8. Segment: If the plotted edges correspond correctly to the breast boundaries, then the pixel values in the area below the boundary are set to 0.