

AbstractID:9619Title :Asegmentationtechniquetoestimatebreastdensityfrom cone beam breastCTimages

**Purpose:** To describe an demonstrated use of a improved segmentation technique to estimate breast density from cone beam breastCT (BCT) images.

**Method and Materials:** To compute the breast density, the dense tissue must be separated from the adipose tissue in the BCT images. To accomplish this task, the BCT images were first processed with a previously reported post-reconstruction method to correct for the beam hardening artifacts induced cupping artifacts. With this method, the adipose signals were extracted from the coronal view CT images and used to form a 3-D background map which was then subtracted from the original images for correction. The corrected data were edge enhanced and smoothed to reduce the noise levels in the images. The results were processed by threshold segmentation to separate the dense tissue from the adipose tissue and form a 3-D dense tissue map which was then used to compute the dense tissue volume and the breast density.

**Results:** For demonstration, the proposed technique was applied to cone beam CT images of mastectomy breast specimens to estimate the breast density. The cupping artifacts were successively corrected for and the dense tissue was successfully separated from the adipose tissue with these segmented dense tissue structures matching well with those visualized in the images.

**Conclusion:** We have successfully implemented a method to use cone beam breast CT images to estimate the breast density. The technique was successfully demonstrated with cone beam CT images of mastectomy breast specimens. This technique lends itself to more accurate and consistent measurement of breast density which may be used as an indicator for breast cancer risk.

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