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Research Article

Integration of Vibro-Acoustography Imaging Modality with the Traditional Mammography

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Abstract

Vibro-acoustography (VA) is a new imaging modality that has been applied to both medical and industrial imaging. Integrating unique diagnostic information of VA with other medical imaging is one of our research interests. In this work, we establish correspondence between the VA images and traditional X-ray mammogram by adopting a flexible control-point selection technique for image registration. A modified second-order polynomial, which simply leads to a scale/rotation/translation invariant registration, was used. The results of registration were used to spatially transform the breast VA images to map with the X-ray mammography with a registration error of less than 1.65 mm. The fused image is defined as a linear integration of the VA and X-ray images. Moreover, a color-based fusion technique was employed to integrate the images for better visualization of structural information.