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Improving the quality of ultrasound images using Bayesian estimators

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Abstract

Medical ultrasound imaging due to close behavior of cancer tumors to body tissues has a low contrast. This problem with synthetic aperture imaging method has been addressed. Although the synthetic aperture imaging technique solved the low-contrast problem of ultrasound images, to an acceptable limit, but the performance of these methods is not even acceptable when the signal to noise ratio (SNR) is low or the length of data is short. Bayesian method is a time-spatial image reconstruction algorithm proposed to compensate for the poor performance of adaptive Beamforming methods in low signal to noise ratio. The main advantage of the Bayesian methods as compared to synthetic aperture imaging once is due to the use of a pre-defined distribution function wich aids image reconstruction. In this study, the minimum mean squared error (MMSE) and maximum a posteriori (MAP) criteria have been used for image reconstruction.

Keywords: Baysian method, Beamforming, Distribution function.

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