عنوان مقاله:

Elastographic Strain Estimation Based on the Bivariate Spline Curve Fitting Method

محل انتشار:

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خلاصه مقاله:

Ultrasound elastography is a noninvasive method for estimating the stiffness distribution of soft biological tissues. In ultrasound elastography, the strains in the axial direction are usually calculated by applying one dimensional gradient operator on the estimated axial displacements. Unfortunately, the direct gradient operation also increases the noise level. In this paper a bivariate spline curve fitting method for estimating the elastographic axial strains from the axial displacement estimates is presented. First, a bivariate cubic smoothingspline is estimated to approximate the axial displacements and then axial strains are calculated as axial derivative of the estimated spline. The simulation and experimental results showed that the new method can improve the elastographic contrast-to-noise ratio (CNRe), signal-to-noise ratio (SNRe), axial and lateral correlation coefficients of the estimated elastograms for a wide range of noise levels without deteriorating the spatial resolution considerably or being time consuming.

کلمات کلیدی:

Ultrasound, elastography, axial strain, bivariate smoothing-spline

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