عنوان مقاله:

Sparse Signal Representation in Scanning Acoustic Microscopy for Tissue Characterization

محل انتشار:

شانزدهمین کنفرانس مهندسی برق ایران (سال: 1387)

تعداد صفحات اصل مقاله: 7

نویسندگان:

Raheleh Mohammadi - *Tarbiat Modares University*

Ali Mahloojifar - *Tarbiat Modares University*

Hadi Zayyani - *Sharif University*

خلاصه مقاله:

Scanning Acoustic Microscope (SAM) system has been developed for biological quantitative measurements of sound speed, attenuation and acoustic impedance of soft tissues. Accurate estimation of reflected ultrasonic echoes is essential for exact determination of these parameters and also for different SAM applications such as C-scan imaging. In this paper, sparse signal representation of ultrasonic signals is used to improve the scanning acoustic microscopy. Sparse representation is obtained by decomposing A-scan signals in an overcomplete dictionary. This method offers a solution for separating closely spaced overlapping echoes beyond the resolution of the SAM. Four different algorithms such as MP, OMP, BP andStOMP are applied to decompose SAM signals of different simulated samples in an overcomplete Gabor dictionary. Their performances are evaluated in estimating tissue thickness and in separating noisy overlapped echoes of SAM signals and extracting specific echo. The results show that StOMP performs best Overall.

کلمات کلیدی:

sparse signal representation, scanning acoustic microscopy, tissue characterization

لینک ثابت مقاله در پایگاه سیویلیکا:

https://civilica.com/doc/47587