

Comparison of Back-Projection with Non-Uniform Fast Fourier Transform for Real-Time Photoacoustic Tomography

Authors : Moungh Young Lee, Chul Gyu Song

Abstract : Photoacoustic imaging is the imaging technology that combines the optical imaging and ultrasound. This provides the high contrast and resolution due to optical imaging and ultrasound imaging, respectively. We developed the real-time photoacoustic tomography (PAT) system using linear-ultrasound transducer and digital acquisition (DAQ) board. There are two types of algorithm for reconstructing the photoacoustic signal. One is back-projection algorithm, the other is FFT algorithm. Especially, we used the non-uniform FFT algorithm. To evaluate the performance of our system and algorithms, we monitored two wires that stands at interval of 2.89 mm and 0.87 mm. Then, we compared the images reconstructed by algorithms. Finally, we monitored the two hairs crossed and compared between these algorithms.

Keywords : back-projection, image comparison, non-uniform FFT, photoacoustic tomography

Conference Title : ICBE 2016 : International Conference on Biomedical Engineering

Conference Location : Boston, United States

Conference Dates : April 25-26, 2016