

International Journal of Biomedical Imaging

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Parallel Implementation of Katsevich's FBP Algorithm

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Abstract

For spiral cone-beam CT, parallel computing is an effective approach to resolving the problem of heavy computation burden. It is well known that the major computation time is spent in the backprojection step for either filtered-backprojection (FBP) or backprojected-filtration (BPF) algorithms. By the cone-beam cover method [1], the backprojection procedure is driven by cone-beam projections, and every cone-beam projection can be backprojected independently. Basing on this fact, we develop a parallel implementation of Katsevich's FBP algorithm. We do all the numerical experiments on a Linux cluster. In one typical experiment, the sequential reconstruction time is 781.3 seconds, while the parallel reconstruction time is 25.7 seconds with 32 processors.

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