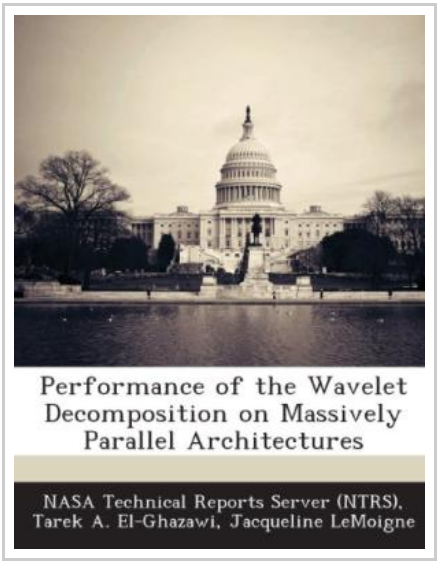

Performance of the Wavelet Decomposition on Massively Parallel Architectures

By Jacqueline Lemoigne

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 34 pages. Dimensions: 9.7in. x 7.4in. x 0.1in.Traditionally, Fourier Transforms have been utilized for performing signal analysis and representation. But although it is straightforward to reconstruct a signal from its Fourier transform, no local description of the signal is included in its Fourier representation. To alleviate this problem, Windowed Fourier transforms and then wavelet transforms have been introduced, and it has been proven that wavelets give a better localization than traditional Fourier transforms, as well as a better division of the time- or space-frequency plane than Windowed Fourier transforms. Because of these properties and after the development of several fast algorithms for computing the wavelet representation of any signal, in particular the Multi-Resolution Analysis (MRA) developed by Mallat, wavelet transforms have increasingly been applied to signal analysis problems, especially real-life problems, in which speed is critical. In this paper we present and compare efficient wavelet decomposition algorithms on different parallel architectures. We report and analyze experimental measurements, using NASA remotely sensed images. Results show that our algorithms achieve significant performance gains on current high performance parallel systems, and meet scientific applications and multimedia requirements. The extensive performance measurements...

Reviews

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