High Performance Deformable Image Registration Algorithms for Manycore Processors

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ELSEVIER SCIENCE TECHNOLOGY, United States, 2013. Paperback. Book Condition: New. 226 x 150 mm. Language: English . Brand New Book. High Performance Deformable Image Registration Algorithms for Manycore Processors develops highly data-parallel image registration algorithms suitable for use on modern multi-core architectures, including graphics processing units (GPUs). Focusing on deformable registration, we show how to develop data-parallel versions of the registration algorithm suitable for execution on the GPU. Image registration is the process of aligning two or more images into a common coordinate frame and is a fundamental step to be able to compare or fuse data obtained from different sensor measurements. Extracting useful information from 2D/3D data is essential to realizing key technologies underlying our daily lives. Examples include autonomous vehicles and humanoid robots that can recognize and manipulate objects in cluttered environments using stereo vision and laser sensing and medical imaging to localize and diagnose tumors in internal organs using data captured by CT/MRI scans. * Demonstrates how to redesign widely used image registration algorithms so as to best expose the underlying parallelism available in these algorithms* Shows how to pose and implement the parallel versions of the algorithms within the single instruction, multiple data (SIMD) model supported...

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