Large-scale Volume Rendering of Multimodal Image Sets

Abstract

Arising from the clinical need for multimodal imaging, automated large-scale image processing, registration and volume rendering techniques for simultaneous processing of image data from multiple sources have been developed. The algorithms satisfy real-time data processing constraints, as required in a clinal routine.

We present an integrated pipeline for multimodal diagnostics comprising of multiple-source image acquisition; efficient, wavelet-based data storage; automated image registration based on mutual information and histogram transformations; and texture-based volume rendering for interactive rendering on multiple scales.

We will discuss how multimodal images can be stored and processed efficiently after histogram transformation and registration. We will also discuss how the variable resolution issue when using different modalities can be resolved efficiently by using a wavelet-based storage pattern.