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Image Segmentation via Hypergraph-based MRF Models

X-ray micro-tomography (μ-CT) is a non-destructive 3D imaging technique often used to image material samples. Synchrotron-based μ-CT instruments produce high volumes of data at a fast rate. This leads to the need for image processing techniques capable of extracting valuable information in large complex data sets. Recent approaches to image segmentation exploit the local properties of Markov Random Fields (MRFs) to run computations in parallel. We have developed an image segmentation algorithm using a hypergraph-based MRF model. The algorithm is coded in C++ and preliminary results indicate that this generalized model improves the precision of the segmentation of μ-CT images.