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Lucia Dettori* (ldettori@cs.depaul.edu), School of CTI, DePaul University, 243 S. Wabash Ave., Chicago, IL 60604, and **Lindsay Semler** (lsemler@cs.depaul.edu). *Wavelet, Ridgelet, and Curvelet-Based Texture Classification of Normal Tissues in Computed Tomography Images.*

This research is aimed at the development of an automated imaging system for classification of tissues in medical images obtained from Computed Tomography scans. Classification based on shape or grey level information is particularly challenging. This is due primarily to the changing shape of organs in a stack of slices and the grey level intensity overlap in soft tissues. However, healthy organs are expected to have a consistent texture across multiple slices. We present a comparison of texture classification algorithms using features extracted from the following transforms: Haar, Daubechies, and Coiflet wavelet, a ridgelet, and a curvelet. The algorithms consist of three steps: segmentation of regions of interest, extraction of the most discriminative texture features, and creation of a decision tree-based classifier to identify the organ tissues. Tests on approximately 2000 images indicate that curvelet-based signatures outperform all other multi-resolution techniques, yielding accuracy rates in the 97 - 98% range. In comparison, a similar algorithm based on wavelet yielded accuracy rates in the 85 - 93% range at best, and the algorithm based on ridgelet texture descriptors yielded accuracy rates in the 91 - 97% range. (Received August 01, 2006)