

Meeting: 1006, Lubbock, Texas, SS 13A, Special Session on Statistical Image Processing and Analysis and Applications

1006-62-236 **Eric Sinzinger*** (eric.sinzinger@ttu.edu), Box 43104, Department of Computer Science, Texas Tech University, Lubbock, TX 79416. *Using Markov Random Fields for Texture Based Radial Segmentation.*

Radial Segmentation provides a powerful representation of local features. This work extends the basic methodology by incorporating texture elements. Radial segmentation divides the region around a vertex into different wedges where the interior of each wedge is maximally homogeneous. Each individual wedge represents a planar region about the vertex. Affine invariant representations can be applied to the individual wedges to provide wide baseline stereo matching.

The new segmentation implementation is done by examining the region around the vertex and incorporating texture segmentation. Nonparametric Markov Random Fields have been shown to be an effective method for texture-based segmentation. The learning of the textures' parameters is redefined in terms of the arc segment and the distribution of texture along small arcs. The maximal homogeneity is determined by minimizing texture distortion.

This method will be tested on both Brodatz textures and natural scenes. The effectiveness of the underlying representation scheme will be demonstrated through a multiview geometric reconstruction of a scene represented by the textured-based radial segmentation wedges. (Received February 15, 2005)