1099-53-399 **Oguz C. Durumeric*** (oguz-durumeric@uiowa.edu) and **Gary Christensen**. *Distance Functions and Cut-locus: From Riemannian Geometry to Thickness and Shape Collapsing in Image Deformations.* Preliminary report.

In this talk, we will discuss some applications of the distance function methods from Riemannian Geometry in other areas. Uniform thickness was defined as the normal injectivity radius of a smooth curve in the Euclidean space, and the non-uniform thickness was studied with weighted distance functions from a submanifold. A phenomenon called shape collapse occurs in image deformation when greedy algorithms (both small and large deformation) are used, this can be detected a priori, and collapsing shape can be predicted by studying the skeleton (a generalization of cut-locus) and the distance function from the boundary of a binary image. (Received February 11, 2014)