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Marcos Craizer* (craizer@mat.puc-rio.br), DMAT-PUC-Rio- Rua M. de S. Vicente, 225, Rio de Janeiro, 22453-900, Brazil. *Differential Properties of Area Distances to Plane Curves.*

Affine invariant distance functions to plane curves are widely used in computer vision. Among them, the area distance function plays a central role. This function has many interesting differential properties: The most remarkable is that it satisfies a non-homogeneous Monge-Ampère differential equation, which automatically connects area distances with improper affine spheres. In this talk, we explore the connection between these concepts and propose a new definition of area distance in the outer part of a convex plane curve. Also, based on the theory of discrete affine spheres, we propose fast algorithms to compute inner and outer area distances to polygons. Since polygons can be thought as discrete approximations of smooth curves, these discrete area distances can be thought as discrete approximations of smooth area distances. (Received January 29, 2008)