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Minh P. Nguyen* (mpn051000@utdallas.edu) and **Yan Cao** (yan.cao@utdallas.edu). *Shape Classification Using Diffeomorphic Deformation of Contours.*

Shape classification is a problem of fundamental importance in computer vision and pattern recognition. Given a set of shapes, the goal is to put similar shapes into the same categories. The challenge is how to define “similarity” between shapes. Some shapes which are similar in an intuitive sense can be extremely difficult (or impossible) for computer to recognize. We propose a new shape comparison method based on diffeomorphic deformation of contours.

Given a binary image of a shape, we consider the largest contour extracted from the image. We then define a shape signature based on diffeomorphic deformation from a common shape (such as circles) to the particular contour. Geometric properties such as distances, tangent vectors and curvatures are used when defining the shape signature. This approach is scalable to large data sets by avoiding pair-wise matching of contours directly. The experimental results on commonly used binary shape databases are discussed. (Received September 24, 2012)