1145-53-2563 **Gunay Dogan*** (gunay.dogan@nist.gov), National Institute of Standards & Technology, 100 Bureau Dr. Stop 8910, Gaithersburg, MD 20899-8910, and **Javier Bernal** and **Charles R Hagwood**. *An Optimization Algorithm for Elastic Shape Distances between 2d Object Boundaries.*

For many problems in science and engineering, one needs to quantitatively compare shapes of objects in images, e.g., anatomical structures in medical images, detected objects in images of natural scenes. One might have large databases of such shapes, and may want to cluster, classify or compare such elements. To be able to perform such analyses, one needs the notion of shape distance quantifying dissimilarity of such entities. In this work, we focus on the elastic shape distance of Srivastava et al. [PAMI, 2011] for closed planar curves. This provides a flexible and intuitive geodesic distance measure between curve shapes in an appropriate shape space, invariant to translation, scaling, rotation and reparametrization. Computing this distance, however, is computationally expensive. The original algorithm proposed by Srivastava et al. using dynamic programming runs in cubic time with respect to the number of nodes per curve. In this work, we propose a new fast hybrid iterative algorithm to compute the elastic shape distance between shapes of closed planar curves. The asymptotic time complexity of our iterative algorithm is O(N log(N)) per iteration. However, in our experiments, we have observed almost a linear trend in the total running times depending on the type of curve data. (Received September 25, 2018)