1002-68-205   **Washington Mio*** (`mio@math.fsu.edu`), Department of Mathematics, Florida State University, Tallahassee, FL 32306-4510, and **Dennis Badlyans**. *Geometric Analysis of Statistical Manifolds with Applications to Object Recognition.* Preliminary report.

Features associated with images and shapes of objects are often encoded in the form of probability density functions (PDF). It is therefore important to identify meaningful metrics that can be used to quantify similarities and dissimilarities of density functions. Also needed are interpolation, dimensionality reduction, and data compression techniques in order to achieve computational efficiency.

We construct a Riemannian manifold, whose elements are PDFs on a finite interval, equipped with a metric whose energy coincides infinitesimally with the Kullback-Leibler divergence. We develop geometric algorithms for the analysis of PDFs using geodesics on this manifold and discuss applications to pattern recognition problems. (Received September 14, 2004)