

GEOMETRY OF THE PROBABILITY SIMPLEX

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The probability simplex on a finite state space can be viewed as the support of various geometric structures e.g., it is an affine space, and a general exponential family, and a Riemannian manifold, and a metric space for the Kantorovich-Rubinstein distance.

I will give a rigorous presentation of all these structures based on the general idea of Statistical Bundle. Cases where the sample space is infinite will be mentioned from the conceptual point of view with emphasis on the Gaussian case.

The aim is to provide a self-contained critical introduction to the recent monograph by Shun-Ichi Amari *Information Geometry and its applications* Springer 2016. Applications to Statistics, Information Theory, Machine Learning, Lagrangian Mechanics will be discussed.