

Geometry and means of positive definite matrices

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Abstract

We will describe two Riemannian distances on the space of positive definite matrices. One of these, the Riemann-Cartan distance, is a matrix version of the Fisher-Rao metric, and the other, the Bures-Wasserstein distance is a matrix version of the Hellinger (Bhattacharyya) distance. Connections with diverse areas like Riemannian geometry, statistics, optimal transport, quantum information and matrix analysis will be indicated.