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Computing Means of SPD matrices — Part 2

Thursday, 12 May 2022 15:00 (1 hour)

One of the most fruitful tasks in data processing is to identify structures in the set where data lie and exploit them to design better models and reliable algorithms.

As a paradigm of this process we show how the cone of positive definite matrices can be endowed with Riemannian geometries alternative to the customary Euclidean geometry. This can provide new tools for data scientists, in terms of averaging and clustering techniques.

These geometries have been used to give a definition of the geometric and the power mean of positive definite matrices. We describe the way in which these objects have been understood and the matrix analytic, geometric and computational tools needed to describe and compute them.
In particular, we will use computational techniques related to primary matrix functions, rational Krylov subspaces and Riemannian optimization.

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