

Robust Inference for Big Manifold-valued data

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Time : May 19th, 2017 3:00PM

The first part of the talk focuses on describing a robust estimation procedure for estimating the Frechet mean of a distribution on a manifold. The theory and algorithms for classical median of means ideas are extended to the inference of big manifold-valued data. The resulting estimator is shown to be robust to outliers and contaminations of arbitrary nature and has stronger concentration around the population mean than the standard empirical Frechet mean. We will then demonstrate this procedure and methods of computation for a large class of manifolds. The second part of the talk briefly mentions about a class of intrinsic Gaussian process models for regression/classification on manifolds employing the connection between heat kernels and the transition densities of Brownian motions on manifolds.