Regularized information geometric and optimal transport distances between covariance operators and Gaussian processes

Minh Hà Quang

The RIKEN Center for Advanced Intelligence Project, Tokyo, Japan

Information geometry (IG) and Optimal transport (OT) have been attracting much research attention in various fields, in particular machine learning and statistics. In this talk, we present results on the generalization of IG and OT distances for finite-dimensional Gaussian measures to the setting of infinite-dimensional Gaussian measures and Gaussian processes.Our focus is on the Entropic Regularization of the 2-Wasserstein distance and the generalization of the Fisher-Rao distance and related quantities.In both settings, regularization leads to many desirable theoretical properties, including in particular dimension-independent convergence and sample complexity. All of the presented formulations admit closed form expressions that can be efficiently computed and applied practically.