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March 3rd, 2022, 15:00, Room 322, MaLGa Center - Dima, Via Dodecaneso 35, Genova.

LCSL Seminar

Regularized information geometric and optimal transport distances for Gaussian processes

Abstract

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. The mathematical formulation involves the interplay of IG and OT with Gaussian processes and the methodology of reproducing kernel Hilbert spaces (RKHS). All of the presented formulations admit closed form expressions that can be efficiently computed and applied practically.

Speaker

Minh Ha Quang

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Minh Ha Quang is currently a unit leader at RIKEN AIP (Advanced Intelligence Project) in Tokyo, Japan, where he leads the Functional Analytic Learning Unit. He received the PhD degree in Mathematics from Brown University (RI, USA), with the dissertation written under the supervision of Stephen Smale. Before joining AIP, he was a researcher at the Italian Institute of Technology in Genova, Italy. His current research focuses on functional analytic and geometrical methods in machine learning and statistics.

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