Séminaire de Probabilités et Statistique

Mardi 16 Janvier 2024 à 14h00

Salle de conférences

Julien Claisse

CEREMADE - Université Paris Dauphine

Mean-field Optimization regularized by Fisher Information .

Recently there is a rising interest in the research of mean-field optimization, in particular because of its role in analyzing the training of neural networks. In this talk, by adding the Fisher information (in other word, the Schrodinger kinetic energy) as the regularizer, we relate the mean-field optimization problem with a so-called mean field Schrodinger (MFS) dynamics. We develop a free energy method to show that the marginal distributions of the MFS dynamics converge exponentially quickly towards the unique minimizer of the regularized optimization problem. We shall see that the MFS is a gradient flow on the probability measure space with respect to the relative entropy. Finally we propose a Monte Carlo method to sample the marginal distributions of the MFS dynamics. This is a joint work with Giovanni Conforti, Zhenjie Ren and Songbo Wang.