



ID de Contribution: 20

Type: Non spécifié

Optimization and sampling from mean-field spin glass models

vendredi 29 avril 2022 09:00 (1h 30m)

These lectures will cover two main topics relating to some computational aspects of mean-field spin glass Gibbs measures:

1- Optimization: Can we efficiently find ground state configurations whenever they exist?

I will introduce the framework of Incremental Approximate Message Passing and the associated optimal control problem. This will be used to compute near optimal ground state configurations in models presenting full replica symmetry breaking, as well as to obtain good lower bounds on the (free) energy in the general case.

2- Sampling: Can we efficiently produce an approximate sample from the associated Gibbs measure?

I will introduce Eldan's Stochastic Localization process, which is a way of decomposing any probability measure into a low entropy mixture of increasingly concentrated components, and use it to design an algorithm for sampling from the Gibbs measure at high-temperature.

For both questions, we will highlight the limitations of these approaches, and show that whenever they fail, a host of other algorithms must fail as well. We will use the SK model as our main playground.

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