ID de Contribution: **18** Type: **Non spécifié**

A new exact and scalable model for multitask gaussian process regression: application to the reconstruction of nuclear data in neutronics codes

jeudi 26 octobre 2023 17:00 (30 minutes)

Multitask gaussian processes are popular tools for learning several correlated outputs, and find applications for instance in medicine, robotics, earth sciences, etc. In this field, the Linear Model of Co-regionalization (LMC) is a very general model, which expressivity and conceptual simplicity are appealing; however, its cubic complexity in both the number of datapoints and number of tasks makes exact computation impractical for most applications, making simplifications or approximations - in general quite complex - mandatory.

We here show that under a very mild restriction on the structure of the noise model, the LMC can actually decouple over latent processes, leading to a complexity that is only linear in the number of said processes. We show how to parametrize and optimize the resulting model, and confirm its excellent behavior with a parametric study on synthetic data. We finally apply this work to a problem of neutronics simulation : the reconstruction of homogenized cross-sections in deterministic codes.

Orateur: TRUFFINET, Olivier (CEA)