STATISTICS
COLORADO STATE UNIVERSITY

Spring 2026 Departmental Seminar

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Monday, April 13 , 2026 12:00 PM
Wagar Building Rm 232

Scalable non-Gaussian variational inference for spatial fields using sparse autoregressive normalizing flows

Abstract

We introduce a novel framework for scalable and flexible variational inference targeting the non-Gaussian posterior of a latent continuous function or field. For both the prior and variational family, we consider sparse autoregressive structures corresponding to nearest-neighbor directed acyclic graphs. Within the variational family, we model conditional distributions with highly flexible normalizing flows. We provide an algorithm for doubly stochastic variational optimization, achieving polylogarithmic time complexity per iteration. Empirical evaluations show that our method offers improved accuracy compared to existing techniques.