ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

DEPARTMENT
OF STATISTICAL SCIENCES
"PAOLO FORTUNATI"

Statistics Seminars 2025/2026

Giovedì 4 Giugno 2026 alle ore 14.30

Sia in presenza, presso l'aula Seminari (ex aula III) in Via Belle Arti, 41, a Bologna, sia in modalità telematica, mediante sistema di videoconferenza su piattaforma Microsoft Teams

"Uncertainty Quantification in Bayesian Clustering"

Prof. Garrit Page
(Brigham Young University)

Abstract

Bayesian clustering methods have the widely touted advantage of providing a probabilistic characterization of uncertainty in clustering through the posterior distribution. An amazing variety of priors and likelihoods have been proposed for clustering in a broad array of settings. There is also a rich literature on Markov chain Monte Carlo (MCMC) algorithms for sampling from posterior clustering distributions. However, there is relatively little work on summarizing the posterior uncertainty. The complexity of the partition space corresponding to different clusterings makes this problem challenging. We propose a post-processing procedure for any Bayesian clustering model with posterior samples that generates a credible set that is easy to use, fast to compute, and intuitive to interpret. We also provide new measures of clustering uncertainty and show how to compute cluster-specific parameter estimates and credible regions that accumulate a desired posterior probability without having to condition on a partition estimate or employ label-switching techniques. We illustrate our procedure through several applications.

L'Organizzatore
Prof. Massimo Ventrucci

Il Direttore
Prof. Carlo Trivisano

La S.V. è invitata