ALPEN-ADRIA UNIVERSITÄT KLAGENFURT

INVITATION TO THE DOCTORAL SEMINAR

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"Cluster time and space: Bayesian modeling and clustering for spatio-temporal areal data"

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Abstract

Spatio-temporal areal data can be seen as a collection of time series which are spatially correlated according to a specific neighboring structure. Incorporating the temporal and spatial dimension into a statistical model poses challenges regarding the underlying theoretical framework as well as efficient computational methods. We propose a Bayesian hierarchical model that allows for model-based clustering of the areal units using a nonparametric prior. Exploiting the sparse structures of the precision matrix of a spatio-temporal Gaussian Random Markov Field we develop an efficient MCMC algorithm. The performance of the model is assessed via an application to study regional unemployment patterns in Italy. Our new model fares well against popular alternatives in an extensive out-of-sample comparison and the additional information obtained from the clustering allows for an extended economic interpretation.

Gregor Kastner and the Department of Statistics look forward to seeing you at the talk!