ALPEN-ADRIA UNIVERSITÄT KLAGENFURT

INVITATION TO THE DOCTORAL SEMINAR

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"Sparse Finite Bayesian Factor Analysis when the Number of Factors is Unknown"

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Abstract

Factor analysis is a popular method to obtain a sparse representation of the covariance matrix of multivariate observations and to uncover the unobserved driving factors behind the observed correlation. However, it is challenging to estimate the unknown number of factors and to recover the factor loading matrix from the data. The present talk reviews recent research in the area of sparse Bayesian factor analysis (BFA) that successfully addresses these issues within a Bayesian framework: (a) the approach relies on the choice of well-calibrated, highly structured priors. Finite and infinite cumulative shrinkage process (CUSP) priors play a crucial role in recovering the number of factors, while elementwise spike-and-slab priors allow to reveal the finer structure of the factor loading matrix (Frühwirth-Schnatter, 2023); (b) to achieve full identification of the factor model, the approach operates in the class of generalized lower triangular (GLT) factor models that generalizes common way of solving rotational invariance and addresses variance identification through a counting rules (Frühwirth-Schnatter, Hosszejni and Lopes, 2023); (c) fitting models to data under these priors requires efficient algorithms to sample from the full

posterior distribution and a reversible jump MCMC sampler is discussed that moves across models of different dimensions (Frühwirth-Schnatter, Hosszejni and Lopes, 2024). Applications to financial time series will serve as an illustration.

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