UNIVERSITÀ DEGLI STUDI DI PADOVA

DIPARTIMENTO DI SCIENZE STATISTICHE

DEPARTMENT OF STATISTICAL SCIENCES
PhD Course in Statistics

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University of Padua
PhD Course in Statistics

XXXIX Cycle Opening

October 27, 2023

Padua | Department of Statistical Sciences,
via Cesare Battisti 241 |
Room SC140

The PhD Course in Statistics welcomes the new PhD students, starting their doctoral program in October 2023.

The event foresees an invited research lecture.

Invited lecture | 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 is rather successful in addressing these issues through the choice of well-calibrated, highly structured priors. Finite and infinite cumulative shrinkage process 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.

Fitting models to data under these priors requires efficient algorithms to sample from the full posterior distribution and details will be provided for a reversible jump MCMC sampler that moves across models of different dimensions. To achieve full identification, the sampler operates in the class of generalized lower triangular (GLT) factor models that generalizes common way of solving rotational invariance.

Applications to financial time series will serve as an illustration.

Programme

16:30 | **Welcome**

Massimiliano Zattin
Vice Rector for Postgraduate and Doctorate Programmes
University of Padova

Nicola Sartori
Coordinator of the PhD Course in Statistics
University of Padova

17.00 | **Invited lecture**

Sylvia Frühwirth-Schnatter,
Full Professor of Applied Statistics and Econometrics at the Wirtschaftsuniversität, Wien

Sparse Bayesian Factor Analysis

18.00 | **Cocktail**