



Department of Decision Sciences

Statistics Seminar

Structured Dynamic Graphical Models & Scaling Multivariate Time Series Methodology

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Thursday, 22nd October

12:30pm Room 3-E4-SR03 Via Röntgen 1 Milano

Abstract

This talk links to some of the history and recent developments in time series using concepts of graphical modelling, emphasizing scaling analyses to time series with increasing numbers of variables, flexible multivariate volatility models, and model evaluation with respect to uncertainty about graphical model structures. This includes generalizations of multi-regression dynamic linear models, referred to as (a) dynamic dependency network models, which involve underlying, directed acyclical graphical model structures, and (b) the more general class of simultaneous graphical dynamic models, based on underlying undirected graphs. Some aspects of model specification, fitting and computation will be noted, including the use of importance sampling and variational Bayes methods to implement sequential analysis and forecasting, and exploitation of GPU-based parallel computing for implementations with higher-dimensional series.

Applied contexts and illustrations come from financial time series analysis, multi-step forecasting, and associated Bayesian decision analysis in portfolio studies.

This work draws on current and research with Lutz Gruber and Zoey Zhao.