ALPEN-ADRIA UNIVERSITÄT KLAGENFURT

INVITATION TO THE DOCTORAL SEMINAR

Weighted conformal Bayesian Inference and Stochastic Volatility

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Chaired by Gregor Kastner | Department of Statistics

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HS 11

ABSTRACT

Conformal Bayesian inference (CBI) is a method to construct predictive confidence regions for a variable of interest in context of regression or classification, and it is popular in fields like machine learning, since it enables quantification of predictive uncertainty. In addition, CBI has the potential to be quite useful in dealing with model misspecification (e.g. concerning the prior of the parameters or the distribution of the regression error). However, this approach assumes exchangeable data which makes it unsuitable for time series that are dominated by various types of heteroskedasticity. We therefore propose a modification of CBI that we call weighted conformal Bayesian inference (WCBI). It aims to correct stochastic volatility (SV) by assigning appropriate weights to the data. The weights are calculated by a Bayesian MCMC algorithm elaborated for estimating SV specific heteroskedasticity. Our method shows promising results both with simulated as well as with historical data. Eventually, we hope to generalize WCBI to handle different other kinds of heteroskedasticity such as generalized autoregressive conditional heteroskedasticity (GARCH).

We hope to see you there!