MEDIZINISCHE UNIVERSITÄT WIEN

Wiener Biometrische Sektion
der Internationalen Biometrischen Gesellschaft
Region Österreich – Schweiz

Einladung zum Biometrischen Kolloquium

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DEEP NON-LINEAR REGRESSION MODELS IN A BAYESIAN FRAMEWORK

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Abstract:

Regression models are addressed for inference and prediction in a wide range of applications providing a powerful scientific tool for the researchers and analysts coming from different fields. In most of these fields more and more sources of data are becoming available introducing a variety of hypothetical explanatory variables for these models to be considered. Model averaging of different combinations of covariates in this context becomes extremely important for both good inference and prediction. Not less important, however, seems to be the quality of the set of explanatory variables to select from. It is often the case that linear relations between the explanatory variables and the response are not sufficient for the high quality inference or predictions. Introducing non-linearities and complex functional interactions based on the original explanatory variables, however, can often significantly improve both predictive and inferential performance of the models. In this paper we introduce a class of deep non linear Bayesian mixed regression models and suggest algorithmic approaches for fitting them. In the experimental section we test some computational properties of the algorithm and show how deep regression models can be used for inference and predictions in various applications.