Topic: Prediction of dependent data - A simulation-based comparison of Machine-Learning with Time Series Techniques

Time series data occur in many fields ranging from biomedical patients over industrial surveillance to economic or stock exchange data. Usually, these data are analysed with methods from time series analysis. However, in the current era of big data, Machine-Learning approaches as the Random Forest have overtaken as they are advertised to work model free. For dependent data, the prediction of future values is of particular interest and importance. This includes point prediction, but also the construction of prediction intervals. The key objectives of this thesis are two-fold: First, through simulation studies shall be conducted for various models to give specific recommendations. Classical approaches from the time series literature shall be compared with more modern approaches using machine-learning techniques. Second, combinations from the two worlds shall be analysed as well.

The thesis will be supervised jointly by both professors.

Contact: Prof. Dr. Carsten Jentsch
Prof. Dr. Markus Pauly

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