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New Family of Time Series Models and Bayesian Inference

címmel tart előadást.

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Kivonat:

In data analysis, the stationary models play a major role in time series modeling. Because many time series occurring in practice have stationary characteristics. Such models are widely used in scientific investigations. But the determination of an appropriate ARMA(p, q) model to represent an observed stationary time series involves a number of inter-related problems. These include the choice of p and q (order determination), and estimation of the remaining parameters, viz., the mean, the co-efficient and the white noise variance s^2.

The topic of order determination and estimation of parameters has attracted considerable attention in the time series literature. Various methods have been proposed and explored, but still many practitioners generally follow the Box-Jenkins approach to time series modeling. Determining the appropriate order of a process by making inference from the sample data is fairly difficult. Also the estimates are to be evaluated iteratively and the estimates may not be unique. A few workers have also attacked this problem using the Bayesian methodology. The solution proposed by these workers also suffers from the same type of drawbacks.

A new family of time series models, called the Full Range Autoregressive model, is introduced which avoids the difficult problem of order determination in time series analysis. Some of the basic statistical properties of the new model are studied. Further, the Bayesian inference and forecasting as applied to the Full Range Autoregressive model are derived. The Canadian lynx data is used to compare the efficiency of the predictive power of the new model with those of some of the existing models in the time series literature.