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Prediction of Time Series
Using Radial Basis Function Networks

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Abstract: Time series forecasting is a great challenge in many fields. In finance, one forecasts stock exchange courses or indices of stock markets; data processing specialists forecast the flow of information on their networks; producers of electricity forecast the load of the following day. The common point to their problems is: how can one analyze and use the past to forecast the future? Many techniques exist, including linear methods (ARX, ARMA…) and nonlinear methods (artificial neural networks). In this talk we present a particular class of artificial neural networks, the Radial Basis Functions Networks (or RBF). Some techniques used for the learning phase of these networks will be presented. The simplicity and the good performances obtained with these techniques will be exposed. Some new improvements concerning the RBF and the choice of the regressor will also be presented. Different time series will be studied, including prediction of electricity load, prediction of the Santa Fe A series, and prediction of a stock market index.

Biography: Amaury Lendasse is a teaching assistant in the Applied Mathematics Department in the Universite Catholique de Louvain. His research concerns time series prediction, Kohonen maps, nonlinear projections, nonlinear approximators, model selection and electricity load prediction. He is currently working towards a Ph.D. degree at the Centre for Systems Engineering and Applied Mechanics (CESAME) in the Universite Catholique de Louvain.