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ESTIMATION PROCEDURE FOR A HIGH DIMENSIONAL DYNAMIC AUTOREGRESSIVE MODEL

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ABSTRACT

We propose a dynamic model with high dimensional training set and high dimensional exogenous predictors. To address the dynamic behavior of the model and high dimensionality, an estimation procedure is developed through a hybrid of sparse principal components and nonparametric regression. Sparse principal component analysis reduces the dimension of the data while accounting for the dynamic behavior of the predictors. Lost information due to selection only of a few principal components is addressed by allowing a more flexible nonparametric structure of the contribution of the principal components. A simulation study illustrates the advantages of the proposed model relative to the AutoRegression with Google search (ARGO) model.

Keywords: dynamic model, nonparametric regression, high dimensional predictors, sparse principal components.