

# Forecasting with time series imaging

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## Abstract

This article considers a bilinear model which includes two different latent effects. The first effect has a direct effect on the response variable whereas the second latent effect is assumed to first effect other latent variables which in turn effect the response variable. In this article latent variables are modelled via rank restrictions on unknown parameters. To have one latent effect which directly effect a response variable has a long history and is often referred to as reduced rank regression. This article presents a likelihood based approach which ends up in explicit estimators. In our model the latent variables act as covariate variables which we know exists but their impact is very vague and will therefore not be considered in detail. One example is if we observe hundreds of weather variables but we cannot say which or how these variables effect, for example, plant growth.