"Structured Additive Regression"

Abstract:

We present semiparametric regression models with structured additive predictor from a Bayesian perspective. Different types of covariates can be incorporated in form of a Bayesian hierarchical model, combining thefollowing features: joint semiparametric estimation of (nonlinear) covariate effects, inclusion of time-varying and spatial effects as well as further model components such as random effects, interaction surfaces or varying coefficient terms.

Inference is based on a unified hierarchical Bayesian formulation of different model components. It can be carried out in a fully Bayesian way using MCMC techniques or in form of an empirical Bayesian approach using mixed model technology. The latter approach is closely related to penalized likelihood. We illustrate with some applications and discuss possible extensions.

This is joint work with Andrea Hennnerfeind and Thomas Kneib.