

KernGPLM – A Package for Kernel-Based Fitting of Generalized Partial Linear and Additive Models

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Abstract

In many cases statisticians are not only required to provide optimal fits or classification results but also to interpret and visualize the fitted curves or discriminant rules. A main issue here is to explain in what way the explanatory variables impact the resulting fit.

The R package KernGPLM (currently under development) implements semiparametric extensions to the generalized linear regression model (GLM), in particular generalized additive and generalized partial linear models. A focus is given to techniques which are applicable for highdimensional data.

This covers in particular backfitting and marginal integration ([Hengartner et al., 1999](#)) techniques, which are both approaches for fitting an additive model when the underlying structure is truly additive. If the underlying structure is non-additive, however, both techniques may produce results that can differently be interpreted. While backfitting searches for the best projection on the additive function space, marginal integration estimators attempt to find the marginal effects of the explanatory variables. The KernGPLM package aims to provide estimation routines for the comparison of these different approaches.

Keywords

additive model, generalized additive model, generalized partial linear model, kernel smoothing, kernel-based regression

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