Variable selection and structure identification for varying coefficient Cox models

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Abstract

We consider varying coefficient Cox models with high-dimensional covariates. We apply the group Lasso method to these models and propose a variable selection procedure. Our procedure copes with variable selection and structure identification from a high dimensional varying coefficient model to a semivarying coefficient model simultaneously. We derive an oracle inequality and closely examine restrictive eigenvalue conditions, too. In this paper, we give the details for Cox models with time-varying coefficients. The theoretical results on variable selection can be easily extended to some other important models and we briefly mention those models since those models can be treated in the same way. The models considered in this paper are the most popular models among structured nonparametric regression models. The results of a small numerical study are also given.

Keywords: censored survival data, high-dimensional data, group Lasso, B-spline basis, structured nonparametric regression model, semivarying coefficient model
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