

VARIABLE SELECTION IN LONGITUDINAL AND ADDITIVE MODELS

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Abstract

Longitudinal models are commonly used for studying data collected on individuals repeatedly through time. While there are now a variety of such models available (Marginal Models, Mixed Effects Models, etc.), the important issue of variable selection has been somewhat neglected in this context. In this talk we discuss some recent proposals based on a generalized version of Mallows's Cp and on cross-validation suitable for use with both parametric and nonparametric models.

We examine their performance with popular marginal longitudinal models (fitted using GEE) and contrast results with what is typically done in practice: variable selection based on Wald-type or score-type tests. In addition we address robustness issues and the case of large-scale studies where often large numbers of potential explanatory variables and hence even larger numbers of candidate models must be considered.

In the final part of the talk we focus on nonparametric inference for additive models and discuss variable selection techniques based on Breiman's nonnegative garrote and other penalized methods.