Challenging Issues in Joint Modelling of Longitudinal and Survival Data

Jane-Ling Wang
Department of Statistics, University of California Davis, USA

It has become increasingly common to observe the survival time of a subject along with baseline and longitudinal covariates. Due to several complications, traditional approaches to marginally model the survival or longitudinal data encounter difficulties. Jointly modeling these two types of data emerges as an effective way to overcome these difficulties. We will discuss the challenges in this area and provide several solutions. One of the difficulties is with the likelihood approaches when the survival component is modeled semiparametrically as in Cox or accelerated failure time models. Several alternatives will be illustrated, including nonparametric MLEs, the method of sieves, and pseudo-likelihood approaches. Another difficulty has to do with the parametric modeling of the longitudinal component. Nonparametric alternatives will be considered to deal with this complication.

[Jane-Ling Wang, Department of Statistics, University of California Davis, California, 95616, USA; wang@wald.ucdavis.edu]