Bayesian joint models for longitudinal and survival data

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A Bayesian joint model for longitudinal and survival data is a joint distribution for survival and longitudinal outcomes together with a prior distribution for all the relevant uncertainties in the problem. It also enhances longitudinal modeling by allowing for the inclusion of nonignorable dropout mechanisms trough survival tools, and survival modeling with the inclusion of internal time-dependent covariates.

We present an overview of our work in this topic and our current interests. In particular, we discuss a Bayesian joint model for assessing the structure and intensity of the association between longitudinal measures of an ordinal marker and a time-to-event outcome. We used a proportional-odds cumulative logit model for the ordinal measurements and a Cox proportional hazard model with left truncation for the time to an event of interest. We applied the model to analyze the risk of breast cancer in women attending a population-based screening program with regard to repeated measurements of mammographic breast density.