

A scalable joint model of longitudinal and survival data with a time-varying association

In a joint model framework, the longitudinal and the survival processes are commonly linked through a parameter that is assumed as time-invariant. There are situations where the strength of the association between these processes can be thought of as dependent on the evolution of the processes. This model has been proposed via MCMC which does not scale well on large data scenarios. A genuine question will be how can we approximate the Bayesian inference in this setting, leveraging, for example, the scalability of the INLA approach. However, direct estimation with INLA cannot be handled but a linearization of the nonlinear predictor can be used iteratively.

Andrinopoulou, E. R., Eilers, P. H., Takkenberg, J. J., & Rizopoulos, D. (2016). Improved dynamic predictions from joint models of longitudinal and survival data with time-varying effects using P-splines. *arXiv preprint arXiv:1609.03439*.