Bayesian Semi-parametric Methods in Biostatistics: A Selective Update

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We review some recent developments in the application of Bayesian nonparametric methodology to semi-parametric problems in the areas of receiver operating characteristic curve estimation, survival analysis with and without time dependent covariates, modeling longitudinal data and jointly modeling longitudinal and survival data. We begin with a brief review of Mixtures of Polya Trees and Dirichlet Process Mixtures, followed by illustrations based on real data. An emphasis is given to selecting among classes of semi-parametric models eg. in survival analysis with time dependent covariates, we may wish to choose among proportional hazards, proportional odds and Cox and Oaks accelerated failure time models.