

Bayesian Nonparametric Biostatistics

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Abstract

We discuss some typical applications of Bayesian nonparametrics in biostatistics. The chosen applications highlight how Bayesian nonparametrics can contribute to addressing some fundamental questions that arise in biomedical research. In particular, we review some modern Bayesian semi- and nonparametric approaches for modeling longitudinal, survival, and medical diagnostic outcome data. Our discussion includes methods for longitudinal data analysis, non-proportional hazards survival analysis, joint modeling of longitudinal and survival data, longitudinal diagnostic test outcome data, and receiver operating characteristic curves. Throughout, we make comparisons among competing BNP models for the various data types considered.