

Variational Approximations for Semiparametric Regression with Missingness

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Semiparametric regression methodology can be used to analyse many problems via a linear mixed model (LMM). When complications such as missing data arise often standard LMM software can no longer be used. In such cases a hierarchical Bayesian (or graphical) model can be formulated to handle such complications and solved using MCMC methods.

However, such an approach is often too slow for large datasets.

Variational approximations offer a faster alternative in such cases.

I will consider a graphical model representation of some missing data models.

Unfortunately the application of standard variational approximations to these models is problematic. A novel combination of efficient numerical integration techniques and variational approximations is developed to solve this problem. The resulting method is extremely fast and reasonably accurate for a variety of examples.