CONSTRUCTION, CONCENTRATION, AND CALIBRATION OF GIBBS POSTERIORS

RYAN MARTIN
Department of Statistics, North Carolina State University, Raleigh, NC 27695, USA
e-mail: rgmarti3@ncsu.edu

A Bayesian approach, which bases inference on a posterior distribution, has certain advantages, but at the expense of requiring specification of a full statistical model. A Gibbs approach, on the other hand, provides a posterior distribution based on a loss function instead of a likelihood, which has its own advantages, including robustness and computational savings. While the asymptotic concentration properties of a suitably constructed Gibbs posterior are fairly well understood [e.g., 1, 2, 5], the mis- or under-specification affects the Gibbs posterior spread in subtle ways. In particular, calibrating the Gibbs posterior credible regions to achieve the nominal coverage probability is non-trivial in general. In this talk, I will present some generalities about the construction, concentration, and calibration of Gibbs posteriors [3] along with applications, including a nonparametric image boundary detection problem [4].

References