The Practical Implementation of Bayesian Model Selection

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Abstract

In principle, the Bayesian approach to model selection is straightforward. Prior probability distributions are used to describe the uncertainty surrounding all unknowns. After observing the data, the posterior distribution provides a coherent post data summary of the remaining uncertainty which is relevant for model selection. However, the practical implementation of this approach often requires carefully tailored priors and novel posterior calculation methods. In this article, we illustrate some of the fundamental practical issues that arise for two different model selection problems: the variable selection problem for the linear model and the CART model selection problem.