

Bayesian Predictive Model Selection

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Abstract:

Selection of a model from a pool of models is often carried out by conducting a series of hypothesis tests or by calculating a criterion statistic for each model. From the Bayesian viewpoint, model selection can be carried out using the Bayes factor - an easily interpreted measure of the weight of evidence in favor of one hypothesis against an alternative hypothesis. In this talk, after first introducing the Bayes factor, we briefly discuss some of its advantages and drawbacks.

Next we consider a different approach, proposed by many authors over the past two decades or so, which is based on measuring the predictive ability of each of the competing models. We focus, in particular, on methods based on the predictive density of a replicate experiment. A salient feature of these methods is the provision of a measure of uncertainty in the model choice. Application of these methods to linear, generalized linear and survival models is discussed.