Intrinsic Bayes’ procedures as $p$ grows with $n$

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Abstract

The intrinsic prior is defined as the prior that is as “close” to the flat prior as possible while providing well-defined Bayes’ factors. In the context of linear models, the Bayes’ factor from intrinsic priors has been shown to be pairwise consistent for any finite true model — even when the number of covariates $p$ increases with the sample size $n$. However, pairwise consistency is not sufficient for the posterior probability of the true model to converge to 1 asymptotically. In this talk, we develop a family of automatic priors on the space of linear models that provides consistent model selection of a fixed true model when $p \approx n$. 