University of California, Irvine
Statistics Seminar

Variable Selection in Non-linear Regression Models: A Parsimony-utility Approach

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(Bldg. #314 on campus map)

Over the last several years, dramatic advances in Bayesian modeling and computation have given us powerful tools for flexible fitting of high dimensional relationships. However, the flexibility and complexity of the modeling procedures comes at a price: we may have difficulty understanding what our models have found. In particular, we are often interested in finding a simple model that works well, with variable selection being an important special case. Traditionally Bayesian approaches to search for a simple model have emphasized the specification of priors on models and computation of the posterior on models. In this paper we emphasize the role of utility in choosing a model. We use fits of the posterior predictive obtained from binary tree models to search for simple structure. Tree models are computationally fast and capable of capturing complex structure so that we can feasibly search for model simplifications that are not too simple in that important variables and complexity (e.g. nonlinearity) are not lost. (Carlos Carvalho, P. Richard Hahn, and Robert McCulloch)

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