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Eric R Ruggieri* (ruggierie@duq.edu), 600 Forbes Avenue, Pittsburgh, PA 15282. *A More Efficient Approach to Bayesian Variable Selection.*

In this talk, we describe an efficient, exact Bayesian algorithm applicable to both variable selection and model averaging problems. A fully Bayesian approach provides a more complete characterization of the posterior ensemble of possible sub-models, but presents a computational challenge as the number of candidate variables increases. While several approximation techniques have been developed to deal with problems that contain a large numbers of candidate variables, including BMA, IBMA, MCMC and Gibbs Sampling approaches, here we focus on improving the time complexity of exact inference using a recursive algorithm [Exact Bayesian Inference in Regression, or EBIR] that uses components of one sub-model to rapidly generate another. Testing against simulated data shows that EBIR significantly reduces compute time without sacrificing accuracy, while comparisons to the results obtained by two MCMC approaches on the Crime and Punishment data set yield similar results. Finally, we illustrate how the BIC approximations employed in the BMA and IBMA procedures depart from the equivalent complexity, exact Bayesian inference of EBIR. (Received September 17, 2011)