

September 27, 2019

Professor Mark Girolami  
Editor-in-Chief of *Statistics and Computing*

Dear Prof. Girolami,

Please find the submitted paper, “Bayesian selection of best subsets via hybrid search,” jointly written by Shiqiang Jin and Gyuhyeong Goh for possible publication in *Statistics and Computing*.

In high-dimensional regression analysis, identifying a subset of relevant predictors, called best subset selection, is crucial for improving model interpretability and prediction accuracy. However, as best subset selection involves non-convex optimization problems, performing best subset selection for high-dimensional data is challenging. While regularization methods such as Lasso have been used as a convex surrogate, their applicability and effectiveness are still limited.

In this paper, we introduce a new Bayesian method for high-dimensional best subset selection. Combining deterministic local search and stochastic global search, we develop a hybrid search algorithm for rapidly identifying the best model. In addition, model selection consistency of the proposed method is established in a Bayesian framework. Our simulation study and real data analysis demonstrate the superiority of the proposed method over existing methods.

We trust that the proposed method is of interest to the broad readership of *Statistics and Computing*. We thank you for your consideration and look forward to hearing from you in due course.

Sincerely,



Gyuhyeong Goh, Ph.D.

Assistant Professor, Department of Statistics  
108E Dickens Hall  
Kansas State University  
1116 Mid-Campus Drive N.  
Manhattan KS 66506-0802  
Phone: (785) 532-0519  
E-mail: ggoh@k-state.edu