Local Variable Selection Based on Prediction Perspective

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Abstract

In spatial applications, globally fitting a spatial regression model over a large domain may be not suitable. Under the situation, how to conduct variable selection and spatial prediction both are active research topics. To alleviate deviations from model assumptions, a novel variable selection criterion is proposed to locally select variables for each subarea. This criterion considers the global spatial dependence of observations and the characteristics of each subarea are also identified. It not only provides a more accurate spatial prediction, but also reduces the prediction variance. Statistical inferences of the proposed method are justified theoretically and numerically.