



<Spatial autoregressive partially linear varying coefficient models>

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Abstract:

<In this article, we consider a class of partially linear spatially varying coefficient autoregressive models for data distributed over complex domains. We propose approximating the varying coefficient functions via bivariate splines over triangulation to deal with the complex boundary of the spatial domain. Under some regularity conditions, the estimated constant coefficients are asymptotically normally distributed, and the estimated varying coefficients are consistent and possess the optimal convergence rate. A penalized bivariate spline estimation method with a more flexible choice of triangulation is proposed. We further develop a fast algorithm to calculate the geodesic distance. The proposed method is much more computationally efficient than the local smoothing methods and thus capable of handling large scales of spatial data. In addition, we propose a model selection approach to identify predictors with constant and varying effects. The performance of the proposed method is evaluated by simulation examples and the Sydney real estate dataset.>

Keywords:

<Bivariate splines>; <penalized splines>; <spatial data>; <triangulation>; <varying coefficient models>

1. Introduction:

<Introduction>

2. Methodology:

<Methodology>

3. Result:

<Result>

4. Discussion and Conclusion:

<Discussion and Conclusion>

References:

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FOR THE PAPER IS SIX PAGES**

