Spatial Data and Estimating Equation

林培生

中正大學數學系

Abstract

This talk is to describe the application of quasi-likelihood estimating equations for spatially correlated data. First, a short introduction about the development of generalized least squared estimates will be presented. A logistic function is then used to model the marginal probability of binary responses in terms of parameters of interest. On the Lp space, the central limit theorem following from the mixing conditions of the Bolthasusen result is established. The consistency and asymptotic normality for quasi-likelihood estimates can then be derived. By modeling spatial correlation with a variogram, we apply these asymptotic results to test independence of two spatially correlated binary outcomes and illustrate the concepts with a well-known example based on data from Lansing Woods. The comparison of generalized estimating equations and the proposed approach is also discussed.