

Using spatial indexes for labeled network analysis

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Abstract

A growing number of data are modeled by a graph that can sometimes be weighted: social network, biological network... In many real world situations, additional information is provided with these relational data, related to each node of the graph. For instance, the nodes of a social network can be labeled by their membership to a social group or, the nodes of a proteins interaction network can be labeled by proteins families. In this framework, an important question is to understand if the labels of the nodes are, somehow, related to the network topology. To address this question, this paper presents exploratory tools that are based on tests coming from spatial statistics. The use of these tests is illustrated on several examples in the social network framework.

Key-words: relational data, social network, Moran's I, join count, permutation test, Moran's plot, influential nodes