Neural Networks for Spatial Models

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The aim of spatial econometrics is to analyze and/or predict the relationship between one dependent variable Y with other variables, building a model that takes into account the spatial dependence. Usual spatial econometric models are based on a neighbourhood matrix whose elements are linked to geographical distances. We propose to use dis tances between prototypes resulting from a neural classification instead. The results are at least as well as the ones obtained from the geograph ical distances based design. In some cases, we need two neighbourhood matrices and the difficulty rising then is to find a second matrix ; then this issue is simply solved by using one matrix based on geographical distances and the other based on neural distances. Finally, the use of neural distances opens the door to use spatial econometrics methods for the analysis and the modelling of any data sets, non necessary geograph ically referenced. We illustrate our approach with two studies of real datasets.