

Point patterns on linear networks: a focus on intensity estimation

Mehdi Moradi

Public University of Navarre, Pamplona, Spain, mehdi.moradi@unavarra.es

The last decade witnessed an extraordinary increase in scientific interest in the analysis of network-related spatial point patterns, which is partly caused by their strongly expanded availability. Examples of such data may include the locations of traffic accidents or street crimes that only happen on/along a network of lines and their spatial distribution greatly depends on the inhomogeneous structure of the underlying network. Hence, there is a need of restricting the support of the underlying point process over the corresponding network structure to set and define a more realistic scenario. However, the analysis of point processes on linear networks has been extremely challenging due to the geometrical complexities of the network. In this talk, after highlighting some related common mathematical/computational challenges, a review of different (non)adaptive and non-parametric intensity estimators for point processes on linear networks, together with their benefits and drawbacks, will be presented. We finally demonstrate applications to traffic accident and criminology.