AURÉLIEN NICOSIA, Laval University
A General Directional Random Walk Model: Application to Animal Movement

We propose a general directional random walk model to describe the movement of an animal that takes into account features of the environment. A circular-linear process models the direction and distance between two consecutive localizations of the animal. A hidden process structure enables modeling situations where the animal exhibits various movement behaviors. The main originality of the proposed approach is that many environmental targets can be simultaneously included in the directional model. The model is fitted using the EM algorithm. We illustrate its use by modeling the movement of an animal in the Canadian boreal forest.