AniMoveMineR: Animal Behavior Exploratory Analysis Using Association Rules Mining

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Abstract : Environmental changes and major natural disasters are most prevalent in the world due to the damage that humanity has caused to nature and these damages directly affect the lives of animals. Thus, the study of animal behavior and their interactions with the environment can provide knowledge that guides researchers and public agencies in preservation and conservation actions. Exploratory analysis of animal movement can determine the patterns of animal behavior and with technological advances the ability of animals to be tracked and, consequently, behavioral studies have been expanded. There is a lot of research on animal movement and behavior, but we note that a proposal that combines resources and allows for exploratory analysis of animal movement and provide statistical measures on individual animal behavior and its interaction with the environment is missing. The contribution of this paper is to present the framework AniMoveMineR, a unified solution that aggregates trajectory analysis and data mining techniques to explore animal movement data and provide a first step in responding questions about the animal individual behavior and their interactions with other animals over time and space. We evaluated the framework through the use of monitored jaguar data in the city of Miranda Pantanal, Brazil, in order to verify if the use of AniMoveMineR allows to identify the interaction level between these jaguars. The results were positive and provided indications about the individual behavior of jaguars and about which jaguars have the highest or lowest correlation.

Keywords : data mining, data science, trajectory, animal behavior