On Estimating the Position and Direction of a Leader of a Group of Entities

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Abstract

Movement patterns can be identified when studying a group of moving entities such as a group of people, a flock of birds, a school of fish, among others. In this paper, we analyze a pattern, known as leadership [1]. Informally, this pattern is characterized by a moving entity called *leader* that motivates or represents the behavior of the group in order to reach a goal during a period. We propose a formal method to estimate the position and the direction where a leader should be located and headed at a time-point in order to lead this group. Our estimations can also be useful to check the consistency of the data about a leadership pattern, and to estimate the missing information (position and direction) of a leader at a specific time. In order to show the expediency of our proposal, we implement and conduct a series of experiments using Netlogo, a programmable modeling environment for simulating social and natural behaviour.

References.

[1] Andersson, M., Gudmundsson, J., Laube, P., and Wolle, T. Reporting leadership patterns among trajectories; ACM symposium on Applied computing (SAC), ACM 2007, p. 3-7.