Percolation analyses in a swarm based algorithm for shortest-path finding

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ABSTRACT

In this paper we show that the convergence in the Ant Colony Optimization (ACO) algorithm can be described as a *"phase- transition"* phenomenon. The analysis of the ACO with the Percolation Theory approach includes: the pheromone evaporation and the number of agents parameters, so, for a given routing environment, it is possible to select these parameters in order to ensure convergence and to avoid overhead in the algorithm. The objective of this work is to present some experiments that support our hypothesis and to show the methodology used to correlate some algorithm parameters and how they influence in its general performance.

REFERENCES

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INDEX TERMS

Primary Classification:
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I.2 ARTIFICIAL INTELLIGENCE
I.2.8 Problem Solving, Control Methods, and Search
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