Optimization with the Idea of Algorithmic Reasoning

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Abstract

Optimization is one of the most remarkable research interests of the Artificial Intelligence field. In time, many different kinds of techniques regarding to 'intelligent optimization' have been developed and introduced to the associated literature. In this context, even a sub-research area called as Swarm Intelligence has taken part under the literature of Artificial Intelligence. At this point, objective of this paper is to introduce an alternative Swarm Intelligence based optimization algorithm, which is inspired from algorithmic thinking – reasoning. In detail, solution approach of the algorithms is based on graphs as similar to some already known algorithms like Ant Colony Optimization, and Intelligent Water Drops Algorithms. As different, the algorithm introduced here tries to get the optimum solution on graph-based solution space by employing some logical decision loops that are similar to basic if-then-else structures of algorithms. Because of that the algorithm is called as 'Algorithmic Reasoning Optimization (ARO)'. The paper briefly introduces background and solution approach of the ARO and provides some results regarding to its evaluation.

Keywords: *artificial intelligence, optimization, swarm intelligence, algorithmic reasoning, algorithmic reasoning optimization, algorithms*