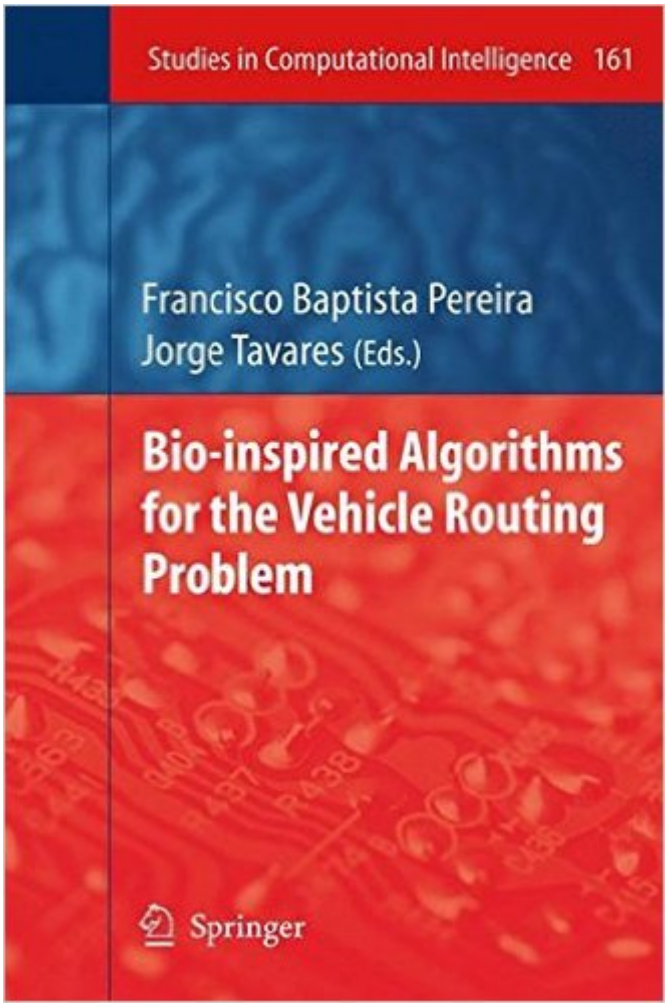
Bio-inspired Algorithms For The Vehicle Routing Problem (Studies In Computational Intelligence)



Synopsis

The vehicle routing problem (VRP) is one of the most famous combinatorial optimization problems. In simple terms, the goal is to determine a set of routes with overall minimum cost that can satisfy several geographical scattered - mands. A ?eet of vehicles located in one or more depots is available to ful?ll the requests. A large number of variants exist, adding di?erent constraints to the original de?nition. Some examples are related to the number of depots, the ordering for visiting the customers or to time windows specifying a desirable period to arrive to a given location. The original version of this problem was proposed by Dantzig and Ramser in 1959 [1]. In their seminal paper, the authors address the calculation of a set of optimal routes for a ?eet of gasoline delivery trucks. Since then, the VRP has attractedtheattentionofalargenumberofresearchers.Aconsiderablepartofits success is a consequence of its practical interest, as it resembles many real-world problems faced everyday by distribution and transportation companies, just to mention a few applications areas. In this context, the development of e?cient optimization techniques is crucial. They are able to provide new and enhanced solutionstologisticoperations,andmaythereforeleadtoasubstantialreduction in costs for companies. Additionally, and from a research oriented perspective, the VRP is a challenging NP-hard problem providing excellent benchmarks to access the e?ciency of new global optimization algorithms.

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