Chapter 1

Logistics Applied to Improve Bottling Water Distribution

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ABSTRACT

The optimization problems have been widely attacked in the area of evolutionary computation, this has been due mainly to the kindness they have shown to solve these problems. This chapter addresses the solution to the problem of optimizing the space within the vehicle to distribute purified water. To solve this problem using a cultural algorithm which helps determine the appropriate charge that provides the best value for the company of this kind of services to the customers of the product. This is done taking into account the space that is available within the vehicle and the different presentations that are distributed. In turn, this study helps us to understand the behavior of (Cultural Algorithms) with respect to the issues raised in the optimization of space vehicle for distributing purified water. In addition prepare a comparative analysis of the results obtained with respect to another method of solving optimization space, and finally describe an extended Partially Dynamic Vehicle Routing which permits determine complicated scenarios and reorganize the stratagems to solve these scenarios.

“For you is an isolated piece of rock, for me is all my World, my home, Argo City”

- Alura In-Zee, Leadership of the Resistance to reubicate in Rokyn Planet

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INTRODUCTION

The Water Purifier and Distributor “La Noria” is a company located in Fresnillo Zacatecas, which is the greatest municipality in Zacatecas State located in Mexico and with the greater economic activity, it is located 60 km to the northeast of the capital, its population dedicates itself mainly to the mining, commerce and industry.

The heading of the water purification, is competed very, this due to several factors, firstly the great companies that count on a great merchandise power and therefore of sales; also, the fillers, places to which people go to fill his water container of 5 gallons denominate in Spanish “Garrafón” by very low costs without stating the quality of the water finally and the local companies with greater antiquity and then also count on a system of distribution and root within the municipality. Therefore, looking for to position the product implies a greater complexity by already set out.

Another important factor is the lack of awareness of the people to use purified water, since much people prefer to directly take it from the faucet since they do not accept the change towards the purified water or by custom or for want of resource. Therefore in this investigation the problem is attacked of Routing and product Accommodate within a water purifier, looking for therefore the solidification of the same, for which, is used altogether a based methodology Mining of Data with the evolutionary algorithms with which work tools were generated, which they are detached one to one so that in the end the conjunction of the same provides the solution to us of the problem.

Data Mining is a technique that reunites the advantages of several areas like Statistic, Artificial intelligence, Linear Regression, among others, using as raw material the data bases; a traditional definition is the following one: “Joint of techniques or tools applied to the process non-trivial to extract and to present/display the implicit process, previously unknown, potentially useful and humanly comprehensible, from 3 great data sets, with the intention of predicting of automated form tendencies and behaviors previously not known” (Ochoa et al., 2008).

This chapter is divided in 5 sections, which are satisfied of the following way: The problem is described and in this way it is spoken about the state-of-the-art with base in works carried out on the basis of Data Mining and Evolutionary Algorithms that are related to the investigation displayed in this investigation. The basic concepts used are provided to realize our investigation and finally, the tools used for the resolution of our problem are described in detail. The arguments that give sustenance to the accomplishment of this project, the main general objectives as much particular and the hypotheses are mentioned that considered solving the problem. The propose techniques are explained, in first plane, became use of some tools of quality and the value chain is described of which it comprises the water purifier as well as the tools based on Data Mining in combination with the Evolutionary Calculation, in this case the Cultural Algorithms. It is before realized a detailed analysis of the results of the programs for the elaboration of routes and Bin Packing and later. Finally design of experiments is realized on our software of Data Mining and a comparative one of the Bin Packing. The conclusions of the work carried out occur and the possible future work is detailed to realize.

JUSTIFICATION OF THE LOGISTICS RESEARCH

Generally when we spoke to increase the volume and sale of some product or service, express comes to the mind concepts or tools like:

- Logistic, since it is a tool that handles and controls flows of merchandise or information.