© International Journal of Combinatorial Optimization Problems and Informatics, Vol. 7, No. 1, Jan-April 2016, pp. 20-29. ISSN: 2007-1558.

Container Ship Stowage Problem to humanitarian aid in Palestine using Cultural Algorithms

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Abstract. Bioinspired algorithms are a generic term used to refer to the solution of computational problems, based on the planning and implementation based on existing models in the evolutionary process-related nature. Most evolutionary algorithms proposed paradigms that occur in the biology of living things and concepts of natural selection, mutation and reproduction. However, other paradigms that can be taken in the creation of evolutionary algorithms also exist such as the forces of nature, which have been many algorithms based on water, gas and wind reactions. Many of the environments involving unstructured problems in this case a problem of accommodation of containers of humanitarian aid to a company with limited resources, which can be considered from the perspective of cultural paradigms, because the cultural paradigms offer a wide range categorized models that ignore the possible solutions to the problem-a common situation in real life. The purpose of this research is to apply evolutionary computation properties of cultural technology; in this case, to corroborate through data mining analysis of how low the support of various companies use technology for their own benefit to propose a solution to a given problem, in our case carry different types of goods deemed humanitarian aid . The mentioned above, to carry out an adaptation from the standpoint of the modeling societies. An environment for conducting tests for this type of analysis in our case a model arrangement of containers was developed in order to enable learning about not very conventional characteristics of a cultural technology. This environment was named Allaliyah in Palestinian culture means "Together we can achieve everything."
Keywords— *Cultural algorithms, data mining, modeling companies.*

1. Introduction

Most of computer problems and especially those related to intelligent optimization are located in the real world, are characterized by not having a definitive (final) solution [1]. Cultural Algorithms use culture as a vehicle for storing relevant information so accessible to members of the population in our case a company artificially for many generations, were developed to model the evolution of the cultural component in time and to demonstrate how This learns and acquires such knowledge [10]. A cultural algorithm can described with the following pseudocode. Initially, a population of individuals representing the solution space is represented as a set of solutions within the search space, which is generated at random to create the first generation of the company. In our example, the solution space contains a list of attributes that can be used in the classification procedure.

```
Begin
t=0;
Initialize POP(t); /* Initialization of population */
Initialize BLF(t); /* Initialization of believing space */
Repeat
Evaluate POP(t);
Vote (BLF (t), Accept (POP(t))));
Adjust (BLF (t));
Evolve(POP(t), Influence(BLF(t)));
t = t +1;
Select POP(t) from POP(t-1);
Until (Term condition is reached)
End
```

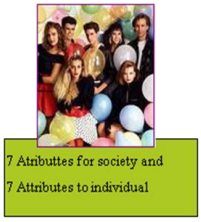
Figure 1. Pseudo code of Cultural Algorithms

The space of beliefs is empty. For each generation, the Cultural Algorithm may imply a population of individuals using the "frame" Vote-inherite-Promote (VIP). During the voting phase of this process, members of the population are evaluated to identify their contribution to the belief space, using the function of acceptance. These beliefs allowed contribute most of the solution of the problem and are selected or placed on the ballot to contribute to the current space of beliefs. The belief space is

Received Dec 8, 2015 / Accepted May 9, 2016

modified when combined with inherited beliefs are beliefs that have been added by the current generation, this is done using a process of reasoning that allows updating the belief space.

Then the updated belief space is used to influence the evolution of the population in our case the artificial society. Belief space is used to influence during the time in which the population of combinations of variables is modified. During the last phase of a new population that is played using a basic set of evolutionary operators. This new population may be evaluated and the cycle goes on. The VIP cycle ends when a stop condition is introduced and is attained. This condition is usually achieved when only a small or no change is detected in the population through several times or when certain knowledge have emerged in the belief space, as shown in Figure 2. According to [9], the brain human could be an instrument of cognitive metaphorical metaphors that could "assume" the knowledge gained in previous form from past experiences and to complete the knowledge needed to solve real world problems. Research on the subject has worked gradually and differently from the models offered by biology [6]. Cultural Algorithms, for example, are based on the assumption of obtaining the best learning which extends, as is the case in an evolutionary algorithm (as in genetic algorithms) [5] adding to this an element of evolutionary pressure called "belief space" - a cultural pressure mechanism. What has often been suggested that cultural evolution allows companies to better development or to be adapted to their environment, in our case to improve the accommodation of humanitarian aid -A support from 27 companies in Europe for the Palestinian people - Cultural Algorithms based on ranges that exceed biological evolution only on the basis of genetic inheritance [10]. Another particular research topic: Artificial Societies, according to [3, 4], consists in simulating social theories or models expressed in the form of computer programs. The main contribution of this research concerns the fact that the cultural paradigm has its own properties and cultural aspects. Second, specifies that some computational problems could benefit from a cultural method of resolution, and this can lead to automation of processes through the use of intelligent agents [5].



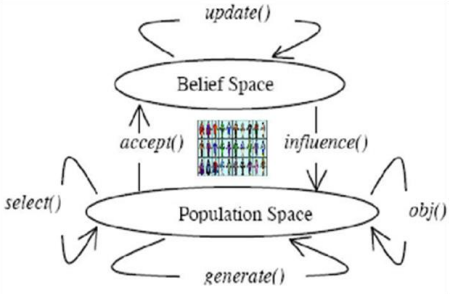


Figure 2. Conceptual diagram of cultural algorithms.

Several authors have written about the confrontation between individuals and society, and how the latter influences their behavior (changes in society over time) [5]. Gessler, makes an approach to artificial societies with regard to cultural issues, proposing some key concepts such as in connection with artificial cultures. These are: Time -This support allows the researcher to simulate the behavior of society towards the future, the past to justify paradigm shifts, or in various scales in time according to the interest of the developer. Space-this may represent a two-dimensional array. Agents and actors interact, what will the behavioral aspects (like that can interact with the real world) and cognitive (the way you think to solve a particular problem). Some of these actions will have an external aspect, while others will be internal and in a cognitive sense. Device-through them characterized as elements, agents can interact and exchange information. Given these concepts, we can build a representation of what could be described as an environment for building a society based on artificial agents and thereby allow the proposed arrangement proposed as shown in [2] to function properly.

2. Designingn Environment to Accommodate Containers on a Cargo Ship

In this research, we focus on a practical problem adapted from the literature related to the provision of containers on a cargo ship and its approach to humanitarian aid can be transported [12, 13 and 14], which is characterized by " negotiation to a suitable accommodation in an adverse environment (time and distance, which for us is a given set of constraints) "to a group of companies characterized by the search for a path according to the shortest time for delivery of aid and safe (a place to go with perishable food and humanitarian aid) the restrictions defined within the cargo space with high uncertainty and specify the shortest delivery and characterized by adverse situations that occur at different times for different situations and travel time including capsize worse. Freight transport is actually just a matter of moving some items including perishable from one point to another, but it is not always that simple and can quickly become a complicated situation because an item can be shipped to our problem in many parts different, which almost never occur in the same place or even in the same country. The reason for this is that industrial shipping companies think much about how they can save money and, therefore, find the countries in which the material, labor and production, respectively, are cheaper, or where donations are consistent the needs of the beneficiary of the aid. The production of

an article and later shipment as a donation in the form of humanitarian aid, therefore, can involve a lot of transport even before it has started the distribution of the complete product to the final destination. This type of optimization problem can be represented by a two dimensional array, called "dimension", which is our search space, as shown in Figure 3, in which each bin represents a value of support and each position which containers should be covered in a limited time-and respect the size and distribution of the cargo ship, which is always expressed in tonnes, these situations are considered penalties (unknown to the freight carriers and represented by cultural algorithms) respectively, and the numbers on the scale represent a cost penalty value to be associated with a situation of irrigation for each of the areas where the load must be located. The aim of the Cultural algorithm is to find your ideal accommodation and accommodation with lower penalties associated with the amount of paradigm shifts and while the spaces associated with the arrangement of the containers are arranged so that there can be "adequate load situations and the constraints of time and physical space, "which is characterized by not considering sanctions maintain a balance in the standard cargo ship bound for Palestine to bring humanitarian aid.

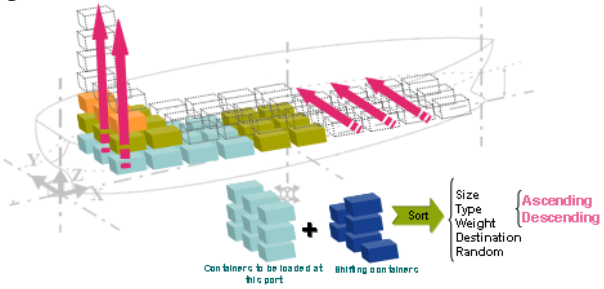


Figure 3. Representation of the problem to solve the arrangement of containers on the aid ship.

The solution to this problem is given by a sequence of generations of agents, designated as "community." Agents can only know the spaces adjacent to them to establish themselves there is an optimum load value and not receive a penalty, as each assessment taking better decisions for each artificial society known only distances and finite spaces. The group of spaces that achieve through each group of agents called "quadrant accommodation". From the point of view of the agents, this optimization problem is quite complex because we do not know the location or distance to arrive at the meta-or whether any resources regarding energy cost and burden to reach hers and you cannot see the search space beyond its quadrant. Also you do not have any previous heuristics to try to improve optimization. For a better understanding of the use of cultural algorithms, these are used to solve an optimization problem with uncertainty; we now introduce some basic concepts and representations of artificial culture related to this problem.
These representations are located between levels of abstraction (The unknown part of the agent), and the domain of the problem (Dimension) and agents. The union of these levels of abstraction is the protocol of artificial-atmosphere model that performs dynamic linking agents, the problem domain and its cultural representation. In the paradigm shift of cultural algorithm, advances in the belief space (beliefspace) are made by the best paradigm (BestParadigm) on what is set to zero, representing the fact that culture increases the amount of benefit associated with such spaces, giving an incentive for behavior associated with the best paradigm (BestParadigm).

2.1 Agents

Agents are actors, with which you can use every space in the dimension of what Freud referred to as the "Principle of satisfaction", according to this, the agent will be able to select the areas with the lowest cost of experimentation.

2.2 Paradigm

The paradigm is the personal representative of agents to the belief space (beliefspace) or his personal interpretation of cultural references. According to Gessler, this represents for each group of agents (artificial societies) cognition and its particular vision of cultural interpretation of the search space. The paradigm may be the best solution to a problem, which is denoted as the best proposed paradigm (BestParadigm).

2.3 Space beliefs (Beliefspace)

The space of beliefs is the collective representation of the real world. In other words, this is the world as it is interpreted by a culture of community being represented, where agents interact to find your way even with moral values -quedar in last position removes them from further participation as a Model Grand Prix.

2.4 Dimension

The dimension is the real world, which can never be fully known by the group of agents. This contains the cost and experimentation in which the agents are able to live to make a proper optimization and this can be improved.

2.5 Exploration

The agents belonging to a community search within the dimension for the most appropriate place to be reached (Meta). The solution obtained by the agents of which are the goals in the shortest number of steps could be considered the "model" of the community, or the best paradigm (BestParadigm). According to Geertz, this model or ideology is a "diagram of the psychological and social processes". The culture then could try to direct the behavior of the new generation of agents through this best solution. The best solution to the optimization problem will be given by the sequence of movements by the agent that lets you find all the optimal number of steps and the lower cost of penalties. Each agent community is led by an objective function that lets you select the blanks with the fewest penalties. If more than one space quadrants of the race possess a minimum penalty and this is identical, the agent will select one freely, in our case, is represented by a random selection. It can be seen that the principle of satisfaction does not affect the overall strategy for solving the problem at the collective level (culture). Instead, it connects the agent with an autonomous entity. The culture controls behavior to be adopted as a model, creating a strategy for action-a common ideology for the group of agents-in terms of a given problem domain. The group of agents selects the cell with the minimum penalty, as indicated by the belief space (Beliefspace) adding to this the cultural value, such as:
beliefspace (x) = beliefspace (x) + dimension (x)
Where x is a set of dimension spaces

In this research the functions represent the group of agents and interaction with their culture to be selected according to the problem to solve, in our case the best accommodation and the load is distributed in an appropriate and balanced manner. Therefore, we cannot try to establish a mathematical model of how the cultural process occurs in the real world. The adoption of a random function as it has tried to show and explain how to include this in the process, a system of multiple interactions between the agent and culture. We try to analyze other mathematical representations in our future work.

3. Using the Template Cultural Algorithm Simulator

To test and validate the theoretical concepts previously presented, Cultural Algorithms simulator was developed to simulate our ideal arrangement of cargo ship (Allaliyah). Initially we intended only create a capable of performing the analysis and the respective experimental environment. When cultural algorithms are used becomes more difficult to understand the peculiarities of each solution. Each time the system has a precise answer, the solution obtained can hardly be duplicated exactly. This property of evolutionary algorithms in general and cultural algorithms, in particular, has been little explored or discussed in the literature. The creation of systems with an individuality or "Soul" is our contribution in the area. To this end, 27 societies that can send different supplements such as those characterized by procurement rules Ferengi [7], which were characterized based on their behavior through seven basic attributes (agility, ability to fight, intelligence, strength is selected, endurance, speed and emotional control), allowing well describe both society and the individual. Allaliyah development was based on our desire to share an intuitive understanding about the treatment of an optimization problem for a new class of systems, with individuals able to possess unexpected creativity, a typical feature of the living entities. Allaliyah shown in Figure 5, the user has the possibility to choose the point and purpose of accommodating from the start, coupled with the places where one can receive a penalty for a bad arrangement made, and the amount of the penalty associated with each space dimension in which societies live (communities of agents). Our prototype was developed using JBuilder X platform.

4. Complementary Methodology

Data mining is the search of global patterns and related what existing between the data bases of huge data, but these data are hidden between them within the immense amount of information [5]. These relationships represent the knowledge of the value of each object and that are in the database to be analyzed. This information is not necessarily a true copy of the information stored in the database. Rather, it is the information that can be deduced from it. One of the main problems of data mining is that the number of possible relationships extracted is exponential [5]. Therefore, there are a variety of heuristic learning machine have been proposed for knowledge discovery in databases [5]. One of the most popular methods for representing the results of data mining is the use of decision trees [8]. A decision tree provides a method for recognizing a particular case of a concept. Which is a strategy of "divide and rule" for the acquisition of the concept (instance). Decision trees have been useful for a variety of case studies in science and engineering, in our case we use data mining to characterize individuals in society (community of agents) and to understand how you can get the best paradigm.

Bin Packing Problem

Bin Packing problem is a complex problem NP. The problem is trying to fit in a container in our case the issue of vehicle fleet with the maximum number of objects of different value and volume, occupying much space as possible.

In this problem what is sought is to try to take the maximum amount of space that is available in the container or container and arrange everything in a better way so you can fit more and can optimize space as shown in the following figure 4:

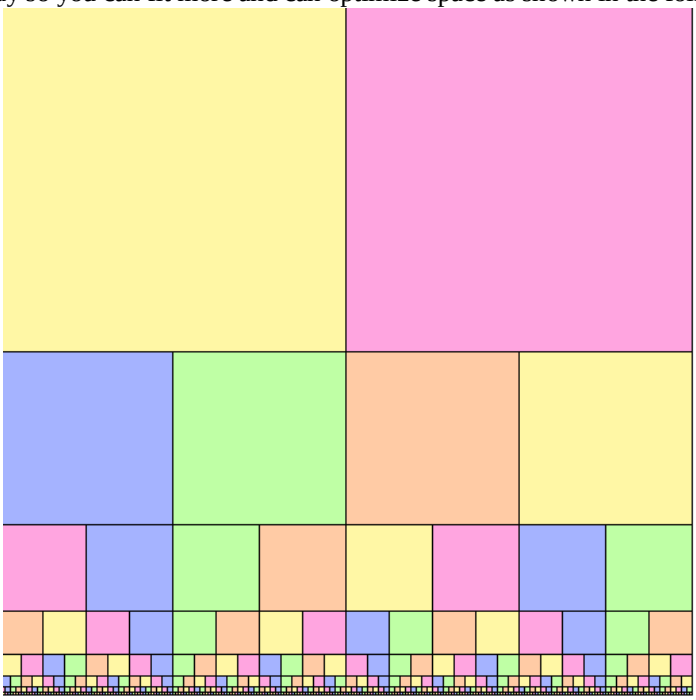


Figure 4. Representation of Bin Packing Problem to our research.

As we can see in the below figure there is no space. All that space was well spent because the objects within the container were properly placed and located by the ranking of importance.

This problem can be stated in different ways, depending on the algorithm that we have to solve. Could be viewed as a problem of definition in the following case: Imagine you have several objects of different volumes and values: In order to obtain the maximum total value of items that could fit in the container need to ask if there N objects in value (Preferably we must use big one).

For example, we can ask if within the container could be obtained with a total value of 500. If the answer to this decision is yes, then we will decrease the number until he tells us that the value provided is not the greatest. After telling us that we should not increase the values related with it distribution on the space until the correct maximum value.
As for the optimization algorithm, following discarding objects alone are not essential or do not have much value and everything will settle down in an automated manner so as we can see in the video below

Justification of the use of Bin Packing Problem is associated with that this issue really struck me because it has a huge variety of applications and uses. It can be applied for example in dumpsters in the trailers they have to maintain a stable weight, to preserve the ecology and do less waste of resources and space that are normally used.

It is essential to know to manage space and do pay well. That is why I consider this very common problem in today's world and can be applied in many ways.

Complexity related with this problem is associated by the values to resolve and as we explained previously, this problem is NP Combinatorial (non-deterministic Polynomial) Complex.

We propose a novel algorithm to resolve this, in the next pseudo code, we show the description of an algorithm we found on different literature about this problem. We recognize that this is an interesting proposal if it because the algorithm has a detailed information.

```
float[] used = new float[n + 1];
   //used[j] is the amount of space in bin j already used
up.
   int i, j;
   Initialize all used entries to 0.0
   Sort S into descending(nonincreasing)order, giving the
sequence S1 >= S2 >= ... >= Sn.
   for(i = 1; i <= n; i++)
     //Look for a bin in which s[i] fits.
     for(j = 1; j <= n; j++)
      if (used[j]+si<+1.0)
        bin[i] = j;
        used[j] += si;
        break;  //exit for(j)
     //continue for(i).
```

It should be noted that to solve this problem means of linear relaxation is required solve about 420 problems linear programming for A solution could be optimal; without global optimal conditions but bigger problems the number of scheduling problems solve linear is much higher and the computational time required could be prohibitive. For this reason alternatives are sought, one is the random search. Is technique is relatively simple: is to generate a random number reasonably feasible of solutions to a given optimization problem and between these choose the best. These solutions feasible are typically generated by means of a probability distribution, usually uniform. Thus, no explores all the possible space, but a sample. Of course, the higher the explored portion, the more likely find the optimal solution.

In this case, the idea is to generate so Random matrices and solve distribution linear programming through the associated problem. To this it was developed the algorithm proposed resolution as random search type together with the following functions:
• mdist (*m*, *n*, *c*) this function generates, through a biased roulette constructed from the vector *d* a matrix distributions. The objective of this is first stored objects whose amount is larger. Here, *c* is vector capabilities packages (c1 = 4 and *c*2 = 6).
• *p*l (W, A, d): This feature solves means the linear programming linear relaxation of the problem:
Close: $w \cdot x\ T$
Subject to:
$A \cdot w \geq xT\ dT\ to\ 1j \in \{0,0, ..., c,\}\ x\ T \in N$

If the solution obtained through linear relaxation is whole, then it is the optimal solution of the whole problem.

If the solution obtained through linear relaxation is not full, it is rounded up (to ensure that it satisfies the problem), although it is possible that none of rounding provide the optimal solution of the whole problem.

The algorithm we propose to solve the better arrangement of objects, and proposed under the scheme of random search should find a solution to the problem, not necessarily optimal. Has as tickets: the number

No object types, *m* the number of types of containers, the vector *d* of demands, the vector *c* capabilities, he cost vector *w* packaging and the number *k* of solutions

They will be generated randomly. The exit the algorithm is the tuple (*x* + *A* -) where *x* + is Local optimal solution found and To distribution matrix objects.

When executing the algorithm with data example and *k* = 50

It was obtained as follows solution:
A k March 2 = 1 2 0 2 x + = (10,34)

That is, it should be a total of 44 packages distributed as follows form: 10 packs of accommodating 7.

The algorithm that we propose and that is based on random search was presented in the previous section is not deterministic in the sense that the run on the same instance of issue can produce solutions different. The algorithm presented then you have the characteristic of that for the same instance of the problem always it produces the same solution, so it is a deterministic.
This algorithm is heuristic type and the like the above solution is not found necessarily optimal.
The algorithm starts from the assumption (not always true) that it is necessary that they are satisfying the demands to go time to start building the distribution for each of the containers.

At example we presented, what you want It is that some of the demands runs in the first container, and then seek all possible distributions for the other claims; It determined how it needed to meet for each and then filled from the following container, applying the same idea recursively.

Eventually, it will get to the case in which you have to fill the last container, would be the basis of the recursion, which It can be solved optimally (as It was shown in [2]), using the algorithm shown below.

Using a single type of container associated with the vehicle fleet of Mail postal service of our research.

Suppose you have a single type container, the demands of different types of objects n d = (*d*1, *d*2, ... , *dc*) and the *c* capacity of the container such that $n \leq c$. They will be determine the matrix distributions.

$$A = (a11 = a21, ..., ac1\ ) T$$

Where: *i1* It represents the number of copies of the ith type objects stored in the only type of container and the number of repetitions x such that: is minimized: x (3) subject to:

$$i1 = a11 + a21 + ... + c\ n\ 1 = i = 1$$
$$x\ \Sigma\ (4)$$
$$i = 1,2, ...\ n$$
$$x \in N$$
$$ai1 \in \{0,1, ..., n\}\ i \in \{1,2, ...\ n\}$$

In this case, the cost is no container as it is unique.

Minimize *x* number of containers is to use same as minimize $w \cdot x$ for values *w* positives.

Suppose juices *d* = (97,76,68) T it would only put on sale in packages of 6, all the same. Post you need to have at least one juice each flavor in the container, a first possible solution is:
i Copies Reps Wanted
Required
January 97 January 97
February 76 January 76
March 68 January 68

Thus, the minimum number of packages that allow exhaust all stocks is 97, since less the existence of the first package no juice It would be exhausted. As you can still put more juice in the package, it could add more juice of the first type:
i Copies Reps Wanted required

January 97 February 49
February 76 January 76
March 68 January 68

Thus, 97 are no longer needed packages (Since having two juices type 1, up stocks required just 49 packets), but 76 needed up stocks of the second type of juice. Thus, repeated the procedure until the container it is full. These values are represented as:
Matrix Mnx (C – n + 1) = mij [ ] Containing the complete example.
(1.97 +) (2.49) (2.49) (2.49 +) (1.76) (1.76 +) (2.38) (2.38) (1.68) (1.68) (1.68 +) (2. 3. 4)
Optimal distribution of a single type container seating 6.
The solution for this example,
d = (97,76,68)
T and c = 6 is x + = 49 and
A = (2,2,2)
T , As shown in the last column in our values.

In each column a solution shown feasible, each constructed from the above solution except the first column, which corresponds to place a juice each type. The first term of tuple corresponds to juice and the second term the number of all packages required to that the system use the juices of the respective type. The demand which requires larger number of packages marked with an asterisk, and in the following

Step juice that type is added.

The idea is to solve the problem the minimum required number of repetitions corresponds container the ceiling of the greater proportion of the demand required i^{th} object *d1* and the number of copies the vessel it h object to *I 1* , namely, *max {[dj / aj 1] / i = 1,2, ..., n }.*

Therefore, the first step is to place a copy of all objects in the container (this is possible thanks to that $c \geq n$, then the object is selected that defines the minimum number of repetitions of the container to meet all claims and a copy is added of that object in our container, repeating the procedure until it is full.

The algorithm that we evaluated only those associated with a container for objects and make better accommodations to each object related with this problem optimally for the case one type of container. Taken as entry number n of different types of objects, container capacity c and demands objects

d = (d1 D2 ... Dc) T, such that c ≥ n. The output of the algorithm is tuple (x + , TO -), where
x + is the optimum solution to the problem and A- determines the number copies of each object in the container.

Figure 4. Environment developed to show the ideal accommodations for our cargo ship container color contemplating the type of supplement that is sent.

5. Design of ExperimentAl corroboration

The development of the design of experiments to corroborate the proper performance of using Allaliyah is analyzed from the level of convergence of the algorithm. The contribution of our research is proposed in the sense of making clear the importance of the creation of a new methodology for characterizing, tune, even visualmente- evaluate and analyze the results. This was not a trivial task, given the diversity of behaviors performed by previous solutions, to explore the Pareto front as Allaliyah made, since it seems a more descriptive anthropology-at involving the concept of diverse societies-a software test easily. In the first experiment, the results of communities 27 50 agents were compared, and secondly with 500 agents each 27 communities. The points associated with the start and the goal to reach are shown in Figure 5. The optimal number of steps from the beginning to the target is 57 for the 50 agents and 34 to 500 agents, this should not mind surprising considering that a larger population would focus on determining a better solution.

Figure 5. Evaluating an issue optimization problem related with Ship Stowage using Allaliyah.

One of the most interesting features were observed in the design of experiments proposed is a variety of established cultural patterns for each community and therefore to its individuals. For solutions with the same number of steps the result provided by the "beliefspace" is completely different, which mostly due to the skills required for each community to build a viable and feasible solution. Structured by agents that are associated with solution models related to the development problem can not be reproduced in general scenarios, because they belong to a particular moment in time and space. They represent a unique model resolution and accurate solution of the problem to be solved and the innovative way of adaptive behavior that solves a problem for calculating the change in complex relationships. This group of settings can be generated metaphorically related knowledge and behavior of the community with respect to an optimization problem (to make alliances, to recommend possible solutions in time and change of perspective according to the need to contextualize the problem) or a tradition of forming a bastion of solutions linked to the experience in time and with starting a dynamic process. Comparing the first 50 agents of the community regarding the community of 500 agents, the latter works better in terms of the average number of steps from the beginning to the end (54.82 vs. 34.96) and standard deviation lower (3.14 versus 3.99). They also had a higher average amount of shift of the paradigm shift (5.85 vs 4.25), indicating that even a minor negotiation in relation to interim periods, which explored the less interesting parts of the search space inside Dimension solution, which could improve their search for better results in more adequately explore the Pareto front. In the second experiment, the same scenarios for the experiment considered later form a solution of a community of 50 officers, five placed near the target areas and start from the proposed solution, a solution with greater viability by the 500 community agents. The new community was informed of its previous configuration due to the cultural aspects of it, but must take into account the new scenario. The comparison between the two solutions is not immediate, from the point of view of trying to solve different problems. In this experiment, which was initially surprising to see how the community of 500 agents, it generated better than that offered by the 50 agents solution, since these solutions were almost optimally, instead of finding new fully comprehensive solutions. These results highlight the preservation of a global action strategy which is regulated by agents, as proposed in [11]. This can be compared metaphorically with the concept of culture mentioned in the literature.

6. Conclusions

A bio-inspired algorithm can not do everything, so the hhibridación by the data mining can properly reolver decritos such problems in literature and improve understanding of the paradigmatic change for classifying communities agent appropriately and in terms attributed to their partnership in a soluciuón approach; this allows us to understand that there is the concept of "situational leadership" associated with finding a line with the paradigm shifts and existing incetidumbre in the environment of the problem solution therefore is based on determining the function accepted by the community with as many kinds of knowledge, and compared to determine the proposed solution for each community. Cultural algorithms provide a powerful alternative to the optimization of specific problems. For that reason it is that it must provide an overview of the cultural phenomenon. This determination to reach a suitable solution leads to the possibility of the generation of the experimental

knowledge associated with the evaluation of each proposed solution, and is created by the community of agents for a specific application domain. In much the extent of this knowledge is cognitively associated with each agent community and this should be a topic for future work. The answer may be similar to the hard work in which individuals to have a communication between two different cultures must participate. The specification of each artificial environment would be a contradiction to digital systems, which are characterized by a large reproduction of models that do not consider the exitente individuality, and lacks the notions of original and copy. In contrast to traditional digital systems, characterized by a wide reproduction, and determined from concepts associated with cutting edge technology and technological culture implied the unique individuality of each part of a system, which is totally different today day, mainly due to the industrial scope and technology transfer rules. The proposal for a better artificial intelligence, which would be in charge of these systems still requires many changes and adjustments to be very useful and is still far in the future, in the same way that we still lack methods to understand aspects original and unique to each company. Future work is to analyze the discussion of priority values and the associated ranking for each type of aid and supplement what could be the reason for priority over others.

ACKNOWLEDGMENT

The authors using a real dataset of supplies try to send to Palestine aid during 2014, these supplies was recollected in all 28 societies but the simulator using all data without United Kingdom because send separately supplies from Scotland and Wales.

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