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Abstract

VHAAI and ISVHAAI stands for Very Highly Advanced Artificial Intelligence and International Society for Very Highly Advanced Artificial Intelligence respectively. This is the ISVHAAI Artificial Intelligence Society Letter No. 7 in which a novel algorithm titled Family Human Swarm Optimization (FHSO) is designed.

Keywords: Family, Father, Mother, Child, Humans, Swarm, Optimization, Family Human Swarm Optimization, FHSO, AI, VHAAI, ISVHAAI.

1. Introduction

Family inspired Swarm Intelligence algorithms are already available in literature as shown in articles [1-5]. In this letter, a unique algorithm titled Family Human Swarm Optimization (FHSO) has been designed. Section 2 and Section 3 shows Family Human Swarm Optimization and Conclusions respectively and references are available at the end.

2. Family Human Swarm Optimization

In Family Human Swarm Optimization (FHSO) algorithm, the search space consists of human families. Father, Mother and Child belongs to one family. So, each family corresponds to a point in search space. Every family has a single fitness value. Hence each family moves together in search space. Hence when there is a position update then Father, Mother and Child moves together in search space.

Fathers Wisdom array is initialized in line no. 1. Mothers Love Matrix is initialized in line no. 2. In line no. 3, Childrens Intelligence array is initialized. All families are initialized in line no. 4. Iteration count is set to 0. In line no. 6 fitness values of all families are calculated. Probability is obtained by dividing the fitness value of family with sum of fitness values of all families. Probabilities of all families are calculated in line no. 7. For each family for loop is started in line no. 8. Random number is generated. A target family "T" is selected based on random number R and probabilities of families. In line no. 11 Direction is obtained and it is divided by its magnitude to obtain a unit vector in line no. 12. There are father, mother and child probabilities. Based on these probabilities one of father, mother and child is selected. If father is selected then the family moves along Direction with magnitude Wisdom_Fathers_Array[family] multiplied by Step value. If mother is selected then family moves along the Direction with magnitude Love_Mothers_Matrix[family][T] multiplied by Step value. If child is selected then the family moves along the Direction with magnitude Intelligence_Children_Array [family] multiplied by Step value. For loop is ended in line no. 17. Iteration counter is incremented by 1. This process continues until termination condition is reached in line no. 19.

3. Procedure

Family Human Swarm Optimization (FHSO)
1) Wisdom_Fathers_Array Initialization
2) Love_Mothers_Matrix Initialization
3) Intelligence_Children_Array Initialization
4) Population Initilization of all Families
5) Iteration Counter is set to 0
6) Families fitness value calculation
7) Probabilities of all families are calculated
8) Repeat for all families:
9) Random number R is generated
10) R and probabilities are used to select a family "T"
11) Direction = (T - family)
12) Divide Direction with its magnitude
13) Select father, mother or child based on probabilities
14) If father is selected then: Loc = Loc + Direction*Wisdom_Fathers_Array[family]*Step
15) If mother is selected then: Loc = Loc + Direction*Love_Mothers_Matrix[family][T]*Step
16) If child is selected then: Loc = Loc + Direction*Intelligence_Children_Array[family]*Step
17) End of repeat for all families loop
18) Iteration Counter incremented by 1
19) Loop until termination condition is reached

4. Conclusions

A new algorithm titled "Family Human Swarm Optimization (FHSO)" is designed in this letter. An innovative idea that human families move together is shown in this work. This letter is inspired by Fathers Wisdom, Mothers Love and

Intelligence of Children. There is scope to explore usage of all family members like Grand Mother, Grand Father and others to design novel and unique algorithms working in the direction shown in this letter.

Reference

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