Original Article

Letter No. 10 - ISVHAAI Artificial Intelligence Society Letters

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Abstract: International Society for Very Highly Advanced Artificial Intelligence is the expansion of ISVHAAI. ISVHAAI is an Artificial Intelligence Society which uses Very Highly Advanced Artificial Intelligence (VHAAI) field for dealing with problems. A new algorithm titled Best Middle Worst Human Swarm Optimization (BMWHSO) is designed in this Letter No. 10 of ISVHAAI Artificial Intelligence Society Letters.

Keywords: AI, VHAAI, ISVHAAI, Human Swarm Optimization, HSO, Best, Middle, Worst, BMWHSO.

I. INTRODUCTION

Swarm Intelligence is an active area of research as shown in articles [1] to [5]. A unique and novel algorithm titled Best Middle Worst Human Swarm Optimization (BMWHSO) is designed in this letter. BMWHSO is shown in section 2. Section 3 shows conclusions and at the end there are references.

II. BEST MIDDLE WORST HUMAN SWARM OPTIMIZATION

Movement_Magnitude_Array and Generation are initialized in line no.1 followed by initialization of population of Humans. In line no. 3, fitness values of Humans are calculated. Humans are sorted based on their fitness values. BH, MH, WH represents Humans with best, middle and worst fitness values respectively. For each Human loop is started in line no. 8. Best_Direction is the direction of Human towards BH. Worst_Direction is the direction of Human away from WH. Middle_Direction is the direction of Human towards MH with 0.5 probability. Middle_Direction is the direction of Human away from MH with 0.5 probability. Best_Direction, Middle_Direction and Worst_Direction directions are converted to unit vectors. Unit vector is obtained by dividing a vector with its magnitude. Position update equation is shown in line no. 17. Human moves along Best_Direction, Middle_Direction and Worst_Direction with magnitude of movement equal to Movement_Magnitude_Array[Human] multiplied by Step value. In line no. 18 for each human loop is ended. Generation is incremented by 1. Repeat this process until termination condition is reached in line no. 20.

A. Procedure: Best Middle Worst Human Swarm Optimization (BMWHSO)

- Initialize Movement_Magnitude_Array and Generation is set to 0
- Population of Humans are Initialized
- Fitness values of Humans are calculated
- Sort the Humans based on their fitness values
- BH = Human with best fitness value
- MH = Human with middle fitness value
- WH = Human with worst fitness value
- For each Human do:
- Best_Direction = (BH - Human)
- Worst_Direction = (Human - WH)
- R = Generate random number
- If R<0.5 then:
- Middle_Direction = (MH - Human)
- Else:
- Middle_Direction = (Human - MH)
- Convert Best_Direction into unit vector
- Convert Middle_Direction into unit vector
- Convert Worst_Direction into unit vector
- Loc = Loc +
- Best_Direction* Movement_Magnitude_Array[Human]*Step +
- Middle_Direction*
- Movement_Magnitude_Array[Human]*Step +
- Worst_Direction*
- Movement_Magnitude_Array[Human]*Step

- End of for each Human Loop
- Generation = Generation + 1
- Repeat this process until termination condition is reached

III. CONCLUSIONS

An innovative algorithm titled Best Middle Worst Human Swarm Optimization (BMWHSO) has been designed in this letter. Humans move towards best human and away from the worst human. They move away or towards middle human with 0.5 probability. There is scope to explore in direction where instead of middle human, a human is randomly chosen from the sorted array and humans move away or towards this randomly chosen human with a certain probability. This is just the beginning of BMWHSO algorithms.

IV. REFERENCES

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