Natural phenomena are the source of all heuristic algorithms. For example, particle swarm optimization(PSO) algo
component, formatting, style, styling, insert
Introduction This document is a model and instructions for LaTeX. Please observe the conference page limits.
An introduction to Dwarf Mongoose Optimization Algorithm The DMO algorithm is inspired by unique compensat
Unlike humans, which are a patriarchal society, dwarf mongoose are a matriarchal society. It is not the female that
The algorithm divide the population into three groups: the alpha group, babysitters, and the scout group. When th
Babysitters The babysitters don't go out foraging, they stay with the young. To be fair, babysitters are rotated per
Alpha group The number of individuals in the population is n, X^t denotes all individuals in the population at time

And the alpha group is updated in the following way:

where, phi follows a uniform distribution $phi \sim U[-1,1]$. In every iteration, the sleeping mound is calculated as the Equ

Scout group The scouts find the next sleeping mound, and the mongooses do not come back to previous sleeping m

where, $rand$ is a random number between 0 and 1, CF is the parameter which can controls the collective-volitive mover

Description of DMO algorithm The flow chart of this algorithm is shown in Figure . When a population is initialize
[t] [width=0.50]flow$_dmo.png Flow chart of genetic algorithm$
Discrete Dwarf Mongoose Optimization Algorithm The key step in designing a discrete algorithm is to define the re
In designing the update operation, we use the update method of genetic algorithm for reference. The GA which is b
[htbp] [width=0.40]ga$_ch.jpg Coding operations in GA$ When encoding the variable, the number of bits encoded is det

Where ub is the upper bound, lb is the lower bound, and p is the interval.
As shown in the Figure , in genetic algorithm, the first three binary digits form a decision variable. When updating
Ternary Operators$(a * X_1 - X_2)$
Our problem is homogeneous with the parallel machines scheduling problem. We will describe the problem in two w
The Parallel Machines Scheduling Problem
The description of it is as follows: there are n jobs $J = \{1, \ldots, n\}$, m machines which are identical $M = \{1, \ldots, m\}$
The parallel machines scheduling problem can be formulated as an integer programming problem: $\min \max_{1 \le j \le m} \sum_{i=}^{n}$
$s.t. \sum_{j=1}^{m} x_{ij} = 1 \quad i = 1, \ldots, n$
$x_{ij} \in \{0, 1\}$ Where the Equation () shows that we should minimize the maximum completion time. The Equation () sho
However, the spatial complexity of this formulation is $O(mn)$, and because each variable is a binary variable, so the

$s.t. \quad x_i \in \{0, 1, \ldots, m\}, \quad i = 1, \ldots, n$ Where the spatial complexity of this formulation is $O(n)$, and the time complexit
[t] Discrete Dwarf Mongoose Optimization AlgorithmParameters nBest solutionInitialize the algorithm parameters:
Initialize the mongoose populations (search agents): n
Initialize the number of babysitters: bs
Set babysitter exchange parameter L
iter = 1 : m k = 1 : bs Select the babysitters
Calculate the fitness of the mongoose
Set time counter C
Find the alpha based on the equation: $\alpha = \frac{fit_i}{\sum_{i=1}^{n} fit_i}$
Produce a candidate food position based on the equation:

Evaluate new fitness of $X_{i+\mathbf{1}}$
Evaluate sleeping mound

Compute the average value of the sleeping mound found:

Compute the movement vector using