

Inteligência Artificial

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AULA7: Exercício teórico algoritmos bioinspirados

Os códigos seguem em anexo e foram implementados em Ruby <3

PSO:

Exercício 02 da lista teórica, adaptei a saída conforme estava especificado no exercício.

```

[359] pry(main)> PsoAlgorithm.perform(example: true)
Iteração 1:

Velocidade (V): [0.0319, 0.3185, 0.3331, 0.2677, -0.3292]
Partículas (X): [-0.343, 3.956, -1.123, -0.098, 0.039]
Fitness      (F): [0.1964, -6.7379, -2.5071, 0.7944, 1.0765]
P Best       : [-0.343, 3.956, -1.123, -0.098, 0.039]
G Best fitness: 1.0765
G Best       : 0.039

Iteração 2:

Velocidade (V): [0.1442, -1.0271, 0.604, 0.2311, -0.2304]
Partículas (X): [-0.1988, 2.9289, -0.519, 0.1331, -0.1914]
Fitness      (F): [0.5629, -1.7207, -0.3074, 1.2485, 0.5806]
P Best       : [-0.1988, 2.9289, -0.519, 0.1331, -0.1914]
G Best fitness: 1.2485
G Best       : 0.1331

Iteração 3:

Velocidade (V): [0.2069, -1.6112, 0.6309, 0.1618, -0.0577]
Partículas (X): [0.0081, 1.3177, 0.1119, 0.2949, -0.2491]
Fitness      (F): [1.0161, 1.8991, 1.2113, 1.5028, 0.4397]
P Best       : [0.0081, 1.3177, 0.1119, 0.2949, -0.2491]
G Best fitness: 1.8991
G Best       : 1.3177

=> 1.3177

```

ACO:

Exercício 3 da lista teórica:

```
[772] pry(main)> AcoAlgorithm.perform

Caminho (1): A => B => C => D => E
[0, 1.25, 1.05, 1.06, 1.17]
[2, 0, 2, 2, 2]
[2, 2, 0, 2, 2]
[2, 2, 2, 0, 2]
[2, 2, 2, 2, 0]

Caminho (2): B => A => E => D => C
[0, 1.25, 1.05, 1.06, 1.17]
[1.5, 0, 1.25, 1.1, 1.07]
[2, 2, 0, 2, 2]
[2, 2, 2, 0, 2]
[2, 2, 2, 2, 0]

Caminho (3): C => B => A => E => D
[0, 1.25, 1.05, 1.06, 1.17]
[1.5, 0, 1.25, 1.1, 1.07]
[1.06, 1.5, 0, 1.17, 1.08]
[2, 2, 2, 0, 2]
[2, 2, 2, 2, 0]

Caminho (4): D => E => A => B => C
[0, 1.25, 1.05, 1.06, 1.17]
[1.5, 0, 1.25, 1.1, 1.07]
[1.06, 1.5, 0, 1.17, 1.08]
[1.05, 1.13, 1.17, 0, 1.25]
[2, 2, 2, 2, 0]
```

Caminho (5): E => D => C => B => A

```
[0, 1.25, 1.05, 1.06, 1.17]
[1.5, 0, 1.25, 1.1, 1.07]
[1.06, 1.5, 0, 1.17, 1.08]
[1.05, 1.13, 1.17, 0, 1.25]
[1.25, 1.07, 1.1, 1.5, 0]
```

=> 5