pyDE Documentation

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Diego T. Volpatto

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Contents

CHAPTER 1

de

1.1 de package

1.1.1 Submodules

1.1.1.1 de.optimization

This module contains the core Differential Evolution calculations.

de.optimization.**optimize**(*fobj*, *dim*, *low_limit*, *high_limit*, *N=100*, *max_number_of_generations=2000*, *mutation_parameter=0.9*, *scale_factor=0.5*, *seed=974378*)

Differential Evolution calculations. This routine computes a minimum of a given objective function. The actual method is only valid for unconstrained optimization problems.

Parameters

- **fobj** (*function*) – The objective function.
- **dim** (*int*) – Number of dimensions of the objective function's argument.
- **low_limit** (*float*) – The inferior limit of the hypercube search region.
- **high_limit** (*float*) – The superior limit of the hypercube search region.
- **N** (*int*) – The number of individuals to be generated.
- **max_number_of_generations** (*int*) – Max number of generations to be employed by the procedure.
- **mutation_parameter** (*float*) – A parameter to related to the success' rate of mutations.
- **scale_factor** (*float*) – A scale factor of linear combination employed in the mutation procedure.
- **seed** (*int*) – A seed to be employed in the pseudo-random numbers generation.

Returns The solution coordinates, the objective function evaluated at this point, the method convergence's flag and the output log message.

Return type tuple

1.1.1.2 de.benchmarks

Provides some benchmark problems to global optimization.

`de.benchmarks.`**`f_ackley`**(*x*, *a*, *b*, *c*)

Define the benchmark Ackley function.

Parameters

- **x** (*numpy.ndarray*) – The function's argument array.
- **a** (*float*) – Function's constant.
- **b** (*float*) – Function's constant.
- **c** (*float*) – Function's constant.

Returns The evaluated function at the given input array.

Return type float

`de.benchmarks.`**`f_rosenbrock`**(*x*)

Define the benchmark Rosenbrock function.

Parameters **x** (*numpy.ndarray*) – The function's argument array.

Returns The evaluated function at the given input array.

Return type float

CHAPTER 2

Indices and tables

- genindex
- modindex
- search

Python Module Index

Index