
pyscenarios Documentation

Release 0.2.0

pyscenarios Developers

2020-07-02

CONTENTS

1	Index	3
1.1	Installation	3
1.2	What's New	3
1.3	copula	4
1.4	sobol	4
1.5	stats	4
2	License	5
Python Module Index		7
Index		9

This package offers several modules used in Monte Carlo simulations:

copula Gaussian Copula, Student T* Copula and IT Copula samples generators

sobol Joe/Kuo Sobol series generator

stats Tail dependence measures

All modules fully support and are optimized for `dask` and are compatible with `dask distributed`.

1.1 Installation

1.1.1 Required dependencies

- Python 3.5 or later
- [dask](#)
- [numba](#)
- [numpy](#)
- [scipy](#)

1.1.2 Testing

To run the test suite after installing pyscenarios, first install (via pypi or conda)

- [py.test](#): Simple unit testing library

and run `py.test`.

1.2 What's New

1.2.1 v0.2.0 (2019-04-29)

- Type annotations
- ‘rng’ parameter in copula functions is now case insensitive
- Work around regression in IT copula with dask >= 1.1 ([dask#4739](#))
- Smaller binary package; simplified setup
- Explicit CI tests for Windows, Python 3.5.0, and Python 3.7
- Mandatory flake8 and mypy in CI
- Changed license to Apache 2.0

1.2.2 v0.1.0 (2018-05-27)

Initial release.

1.3 copula

1.4 sobol

1.5 stats

Statistical functions

```
pyscenarios.stats.tail_dependence(x: Any, y: Any, q: Any) → Union[numpy.ndarray,  
dask.array.core.Array]
```

Calculate tail dependence between vectors x and y.

Parameters

- **x** – 1D array-like or dask array containing samples from a uniform (0, 1) distribution.
- **y** – other array to compare against
- **q** – quantile(s) ($0 < q < 1$). Either a scalar or a ND array-like or dask array.

Returns

array of the same shape and type as q, containing:

$$\begin{aligned} P(y < q | x < q) | q < 0.5 \\ P(y \geq q | x \geq q) | q \geq 0.5 \end{aligned}$$

**CHAPTER
TWO**

LICENSE

pyscenarios is available under the open source [Apache License](#).

PYTHON MODULE INDEX

p

`pyscenarios.stats`, 4

INDEX

M

module
 pyscenarios.stats, 4

P

pyscenarios.stats
 module, 4

T

tail_dependence () (*in module pyscenarios.stats*), 4