sequgen Documentation

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Generalization Team

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API REFERENCE

1.1 sequgen package

1.1.1 Subpackages

sequgen.deterministic package

Submodules

sequgen.deterministic.boxcar module

sequgen.deterministic.boxcar.**boxcar**(*t_predict*, *location*, *width*, *height=1.0*)

Generate a time series containing boxcar function.

Parameters

- **t_predict** (*Numpy array*) – Where you want the model to generate predictions.
- **location** (*float*) – The start (left point) of the plateau.
- **height** (*float*) – The height of the plateau.
- **width** (*float*) – The width of the plateau.

Returns Numpy array of shape equal to t_predict containing the signal with the boxcar plateau.

sequgen.deterministic.constant module

sequgen.deterministic.constant.**constant**(*t_predict*, *value*)

Generates a time series array with constant value.

Generates a time series array with constant value *value* for all elements in *t_predict*.

Args

t_predict: Numpy array containing the points in time where you want to generate a prediction using the 'constant' model.

value: Value of the dependent variable. Constant for all values of *t* in *t_predict*

Returns Numpy array with equal shape as that of *t_predict*, filled with constant value *value*

sequgen.deterministic.normal_peak module

sequgen.deterministic.normal_peak.**normal_peak**(*t_predict*, *location*, *stddev=1.0*, *unit_integral=None*, *height=None*)

Generates a peak whose shape is the gaussian distribution function :param t_predict: Numpy array with points in time where you want the model to generate predictions. :param location: Where you want to place the peak of the curve. :type location: float :param stddev: Shape factor that affects the width of the distribution. :type stddev: float :param height: What the peak height should be. :type height: float :param unit_integral: If true, area under the curve sums to unity :type unit_integral: bool

Returns Numpy array with shape equal to t_predict, containing the y values for the normal peak curve.

sequgen.deterministic.sine module

sequgen.deterministic.sine.**sine**(*t_predict*, *wavelength*, *phase_shift=0*, *amplitude=1.0*, *average=0.0*)

Generates a sine curve.

Parameters

- **t_predict** – Numpy array with points in time where you want the model to generate predictions.
- **phase_shift** – How much the phase is shifted in units of t_predict
- **amplitude** – Amplitude of the sine.
- **wavelength** – Wavelength of the sine in units of t_predict.
- **average** – What the average of the sine wave is, i.e. how much the sine wave is offset from y=0.

Returns Numpy array with shape equal to t_predict, containing the y values for the sine wave curve.

sequgen.deterministic.triangular_peak module

sequgen.deterministic.triangular_peak.**triangular_peak**(*t_predict*, *width_base_left*, *width_base_right*, *location*, *height=1.0*)

Generate a time series containing a triangular peak.

Parameters

- **t_predict** (*Numpy array*) – Where you want the model to generate predictions.
- **width_base_left** (*float*) – The width of the left part of the triangular peak in units of t_predict.
- **width_base_right** (*float*) – The width of the right part of the triangular peak in units of t_predict.
- **height** (*float*) – The height of the peak in user-defined units.
- **location** (*float*) – Where the peak should be placed on the time axis in units of t_predict.

Returns Numpy array of shape equal to t_predict containing the curve for a triangular peak in user-defined units.

sequgen.samplers package

Submodules

sequgen.samplers.sample_uniform_random module

sequgen.samplers.sample_uniform_random.**sample_uniform_random**(*dimension_names=None*, *lower_bounds=None*, *upper_bounds=None*)

Takes a uniform random sample from the parameter space.

Parameters

- **dimension_names** – Array of names of the dimensions of the parameter space.
- **lower_bounds** – Array of lower bounds of the dimensions of the parameter space.
- **upper_bounds** – Array of upper bounds of the dimensions of the parameter space.

Returns Dictionary with keys equal to the dimension names, together representing a uniform random draw from the parameter space.

sequgen.stochastic package

Submodules

sequgen.stochastic.gaussian module

sequgen.stochastic.gaussian.**gaussian**(*t_predict*, *stddev=1.0*, *average=0.0*, *correlation_length=0.0*)

Generate an array with an optionally autocorrelated time series of draws from a Normal distribution.

Parameters

- **t_predict** (*Numpy array*) – points in time where you want to generate a prediction using this model.
- **stddev** (*float*) – standard deviation of the Normal distribution that we will be drawing random samples from.
- **average** (*float*) – mean of the Normal distribution that we will be drawing samples from.
- **correlation_length** (*float*) – Correlation length in units of *t_predict*. Default is 0.0, for uncorrelated samples.

Returns Numpy array of shape equal to t_predict, where each elem is a random and optionally autocorrelated draw from a Normal distribution.

1.1.2 Submodules

sequgen.dimension module

class sequgen.dimension.**Dimension**(*name: str*, *lower_bound: Union[float, int]*, *upper_bound: Optional[Union[float, int]] = None*)

Bases: object

Class representing one dimension of a parameter space.

Bound
alias of Union[float, int]

sequgen.parameter_space module

class sequgen.parameter_space.**ParameterSpace**(*dimensions: Iterable[sequgen.dimension.Dimension]*, *sampler: Optional[Callable] = None*)

Bases: object

Class representing a parameter space.

Dimensions
alias of Iterable[sequgen.dimension.Dimension]

format_str()
Format string that can be used to print formatted information about the dimensions of the parameter space

sample()
Draw a sample from the parameter space. Defaults to uniform random draw.

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