skfda.datasets.make_random_warping

skfda.datasets.make_random_warping($n\_samples: int = 15, n\_features: int = 100, *, start: float = 0.0, stop: float = 1.0, sigma: float = 1.0, shape\_parameter: float = 50, n\_random: int = 4, random\_state=None$)   [source]

Generate random warping functions.

Let $v(t)$ be a randomly generated function defined in $[0, 1]$

$$v(t) = \sum_{j=0}^{N} a_j \sin(\frac{2\pi j}{K}t) + b_j \cos(\frac{2\pi j}{K}t)$$

where $a_j, b_j \sim N(0, \sigma)$.

The random warping it is constructed making an exponential map to Γ.

$$\gamma(t) = \int_0^t \left(\frac{\sin(\|v\|)}{\|v\|} v(s) + \cos(\|v\|) \right)^2 ds$$

An affine traslation it is used to define the warping in $[a, b]$.

The smoothing and shape of the warpings can be controlling changing N, σ and $K = 1 + \text{shape\_parameter}$.

Parameters:	• **n_samples** – Total number of samples. Defaults 15.
	• **n_features** – The total number of trajectories. Defaults 100.
	• **start** – Starting point of the samples. Defaults 1.
	• **stop** – Ending point of the samples. Defaults 0.
	• **sigma** – Parameter to control the variance of the samples. Defaults 1.
	• **shape_parameter** – Parameter to control the shape of the warpings. Should be a positive value. When the shape parameter goes to infinity the warpings generated are γ_{id}. Defaults to 50.
	• **n_random** – Number of random sines and cosines to be sum to construct the warpings.
	• **random_state** – Random state.

Returns:	`FDataGrid` object comprising all the samples.