RandomVariates and Their Parameters in DESpy

Following are the random variates currently implemented in DESpy and their respective parameters.

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| **Random Variate** | **Parameter(s)** |
| Exponential | mean (positive) |
| Gamma | alpha (positive), beta (positive) |
| Beta | alpha (positive), beta (positive) |
| Uniform | min, max (min ≤ max) |
| Constant | Value |
| Triangular | min, mode, max (min ≤ mode ≤ max) |
| Normal | mean, stdev (stdev > 0) |
| DiscreteUniform | min, max (min ≤ max and both integer) |
| Binomial | n, p (n positive integer; p ∈ [0,1]) |
| Geometric | p (p ∈ [0,1]) |
| Discrete | values, frequencies – values can be any array of numbers; frequencies can be any array of non-negative numbers of the same length as the values array. (Note: the frequencies need not add to 1.0, but will be normalized to do so by the Discrete class) |

There are several ways to obtain a RandomVariate instance. The first is to use the factory method RandomVariate.instance(<name>, param1=value1, param2=value2). For example:

rv = RandomVariate.instance(‘Normal’, mean=1.2, stdev=0.7)

The second way is to put the parameters into a dictionary and pass it as the second argument (named “params”):

parameters = {**"alpha"**:2.5, **"beta"**:3.4}

rv = RandomVariate.instance(**'Gamma'**, params=parameters)

Instead of using the factory method, a given RandomVariate can be directly instantiated, with the constructor conventions following that of the parameters.