

Universal functions (ufunc)

A universal function (or [ufunc](#) for short) is a function that operates on [ndarrays](#) in an element-by-element fashion, supporting [array broadcasting](#), [type casting](#), and several other standard features. That is, a ufunc is a “vectorized” wrapper for a function that takes a fixed number of specific inputs and produces a fixed number of specific outputs.

In NumPy, universal functions are instances of the `numpy.ufunc` class. Many of the built-in functions are implemented in compiled C code. The basic ufuncs operate on scalars, but there is also a generalized kind for which the basic elements are sub-arrays (vectors, matrices, etc.), and broadcasting is done over other dimensions. One can also produce custom ufunc instances using the [frompyfunc](#) factory function.