Array Methods and Attributes

Array Methods and Attributes

In this section we will look at some methods and attributes that arrays have. This is not a complete list, but rather highlighting things you may find useful.

Let's start off by creating a fairly large array, for example a collection of human height measurements:

[2]:
```
heights = np.array(
      [ 2.13159377,  1.8864508 ,  1.63504183,  1.71173878,  1.78826872,
        1.60621813,  1.74630706,  2.11123384,  1.54212979,  1.39184441,
        1.7919224 ,  1.80299245,  1.73770464,  1.95233673,  1.47179093,
        1.70506609,  1.41194434,  2.05643464,  1.8262583 ,  1.47764985,
        1.61362183,  1.65600316,  1.42078883,  1.78059602,  1.80600655,
        1.91634004,  1.82746488,  1.82688072,  1.82053352,  1.84882458,
        1.80672297,  1.4646136 ,  1.71033286,  1.83272236,  1.97074545,
        1.96265325,  1.39817665,  1.55933323,  1.59111903,  1.53108805,
        1.33635392,  1.74971951,  1.56885338,  1.6614742 ,  1.70868504,
        1.58476337,  1.69233894,  1.73520641,  1.71248418,  1.75484377])
```

To get the number of elements in an array, we can use the `size` attribute:

[12]:
```
print('The size of the heights array:', heights.size)
```

```
The size of the heights array: 50
```

For 1 dimensional arrays this is gives us the same value as using `len()`, but for multidimensional arrays, `len()` will not return the total number of elements.

Minimum and Maximum Values

You can use the `min()` and `max()` methods to get the minimum and maximum values of an array respectively.

[13]:
```
print('Minimum height:', heights.min())
print('Maximum height', heights.max())
```

```
Minimum height: 1.33635392
Maximum height 2.13159377
```

Again, this gives you similar results to the functions in the Standard Library, but is the only option for arrays of higher dimensions.

Statistical Functions

NumPy provides us with some basic statistical functions out of the box. For example the `mean()` (arithmetic mean or average) and `std()` (standard deviation).

[9]:
```
print('Average height: ', heights.mean())
print('Standard deviation of heights: ', heights.std())
```

```
Average height:  1.712684356
Standard deviation of heights:  0.18476698650385862
```

[8]:
```
print('Average height:', np.mean(heights))
print('Standard deviation of heights:', np.std(heights))
print('Maximum height:', np.max(heights))
print('Mimimum height:', np.min(heights))
```

```
Average height: 1.712684356
Standard deviation of heights: 0.18476698650385862
Maximum height: 2.13159377
Mimimum height: 1.33635392
```