Lec 06 - Advanced indexing & Broadcasting

Statistical Computing and Computation

Sta 663 | Spring 2022

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NumPy - Advanced Indexing

From last time: subsetting with tuples

Unlike lists, an ndarray can be subset by a tuple containing integers,

```
x = np.arange(6)
x
```

```
## array([0, 1, 2, 3, 4, 5])
```

```
x[(0,1,3),]
```

```
## array([0, 1, 3])
```

```
x[(0,1,3)]
```

```
## Error in py_call_impl(callable, dots$args, dots
##
## Detailed traceback:
##   File "<string>", line 1, in <module>
```

More next time on why `x[(0,1,3)]` does not work.

```
x = np.arange(16).reshape((4,4))
x
```

```
## array([[ 0,  1,  2,  3],
##        [ 4,  5,  6,  7],
##        [ 8,  9, 10, 11],
##        [12, 13, 14, 15]])
```

```
x[(0,1,3), :]
```

```
## array([[ 0,  1,  2,  3],
##        [ 4,  5,  6,  7],
##        [12, 13, 14, 15]])
```

```
x[:, (0,1,3)]
```

```
## array([[ 0,  1,  3],
##        [ 4,  5,  7],
##        [ 8,  9, 11],
##        [12, 13, 15]])
```

Integer array subsetting (lists)

Lists of integers can be used to subset in the same way:

```
x = np.arange(6)
x
```

```
## array([0, 1, 2, 3, 4, 5])
```

```
x[[0,1,3],]
```

```
## array([0, 1, 3])
```

```
x[[0,1,3]]
```

```
## array([0, 1, 3])
```

Note that the , is now optional

```
x = np.arange(16).reshape((4,4))
x
```

```
## array([[ 0,  1,  2,  3],
##        [ 4,  5,  6,  7],
##        [ 8,  9, 10, 11],
##        [12, 13, 14, 15]])
```

```
x[[1,3], ]
```

```
## array([[ 4,  5,  6,  7],
##        [12, 13, 14, 15]])
```

```
x[:, [1,3]]
```

```
## array([[ 1,  3],
##        [ 5,  7],
##        [ 9, 11],
##        [13, 15]])
```

```
x[[1,3], [1,3]]
```