Lecture Notes on

Python

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Notes on Python

Contents

1 NumPy

- `numpy` is a library used to deal with matrices.
- There are two broad distinctions here: creating arrays and manipulating arrays.
- The two most common applications of creating arrays is range-based filling and random-based filling. You execute these respectively by `np.arange(start, stop + 1)` and `np.random.(...)`.
- Next is manipulating arrays. Numpy is built to make this intuitive, so your intuition should be enough to manipulate arrays just fine.

2 Pandas

- Pandas is a library that gives us useful data structures to work with. The most useful of these is the **DataFrame**.
- DataFrames feel similar to Trees in ROOT. They are grids of data, with named columns and numbered rows. A DataFrame takes in an array and a list of column names to be created, so

```
df = pd.DataFrame(data=myData, columns=myColumns)
```

- You can access specific rows and columns of your DataFrame like so. You can also access slices of the DataFrame if you'd like.

```
# Row
df.iloc[[rowNum]]
# Column
df['column name']
# Slice
df[start:stop]
```

- You may also copy DataFrames, either by reference or by copying. Reference is what you think it is (will change both), and copying is just a copy. You do them like so.

```
# By reference
referenceDf = df
# By copying
copyDf = df.copy()
```