**NumPy**

**Create NumPy**

**Import** numpy

Num = numpy.array([10,20,30,40])

**Functions NumPy**

* A.shape - Array Dimensions #rows, columns
* Len(a) - Length of array #number of nested values
* A.ndim - Number of Array Dimensions #number of element
* A.size - Number of Array Elements #datatype of variables
* A.dtype - Data Type of Array elements #datatype of array
* A.astype(int) - Convert on array to a different datatype #conversion of datatype

**Mathematical Operations and Functions on Array**

* np.add(a,b)
* np.subtract(a,b)
* np.multiply(a,b)
* np.divide(a,b)
* np.power(a,b)
* np.sqrt(a,b)

**Combining and Splitting Arrays**

* **Combine**

**Concatenate**

a = np.array([[10,20],[30,40]])

b = np.array([[2,4],[3,6]])

print(np.concatenate([a,b]))

**Hstack #Horizontal Concatenate**

print(np.hstack([a,b]))

**Vstack #Vertical Concatenate**

print(np.vstack([a,b]))

* **Splitting**

a = np.array([10,20,30,40,50,60,70,80,90])

print(np.array\_split(a,4))

**Adding and Removing Elements in Arrays**

**Append**

b = np.append(a, 100) Append items to an array

**Insert**

b = np.insert(a, 4, 100) Insert items in an array

**delete**

b = np.delete(a,[2]) delete items from an array

**Sort**

a = np.array([3,5,3,1,8,4,9,6])

print(np.sort(a))

**Aggregating Functions of NumPy**

np.sum(a)

np.min(a)

np.max(a)

np.cumsum(a)

np.sumprod(a)

**Statistical Functions in NumPy**

np.mean(a) #sum of all values/number of values

np.median(a) #central value after sorting

stats.mode(a) #most time in data

np.std(a) standard deviation

np.var(a) variance

np.corrcoef([a,b])