NUMPY CHEATSHEET for DATA SCIENCE

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1. IMPORTING NUMPY

- import numpy as np

2. CREATING ARRAYS

FROM A LIST:

- arr = np.array([1, 2, 3, 4, 5])

ZEROS AND ONES ARRAYS:

- zeros_arr = np.zeros(5)
- ones_arr = np.ones(5)

RANGE OF VALUES:

- range_arr = np.arange(start, stop, step)

RANDOM VALUES:

- rand_arr = np.random.rand(3, 3) # 3x3 random array

3. BASIC ARITHMETIC OPERATIONS:

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- result = arr1 + arr2
- result = arr1 - arr2
- result = arr1* arr2
- result = arr1/arr2

ELEMENT-WISE OPERATIONS:

- result = np.square(arr)
- result = np.sqrt(arr)
- result = np.exp(arr)

DOT PRODUCT:

- dot_product = np.dot(arr1, arr2)

4. ARRAY MANIPULATION

RESHAPE:

- **reshaped_arr = arr.reshape(rows, cols)**

TRANSPOSE:

- **transposed_arr = arr.T**

FLATTEN:

- **flattened arr = arr.flatten()**

5. STATISTICAL OPERATIONS

MEAN, MEDIAN, STANDARD DEVIATION:

- **mean_val = np.mean(arr)**
- **median_val = np.median(arr)**
- **std_dev = np.std(arr)**

SUM, MIN, MAX:

- **total_sum = np.sum(arr) min_val = np.min(arr) max_val = np.max(arr)**

6. INDEXING AND SLICING

- **element = arr[index]**
- **sub_array = arr[start:stop]**

7. LOGICAL OPERATIONS

- **bool_arr = arr> 3**

8. BROADCASTING

- result = arr + 5 # Adds 5 to each element of the array

9. CONCATENATION

- combined arr = np.concatenate((arr1, arr2), axis=0) #
- Concatenate along rows (axis=0)

10. STACKING

- stacked_arr = np.vstack((arr1arr2)) # Vertically stack arrays

11. LINEAR ALGEBRA

- eigenvalues, eigenvectors = np.linalg.eig(matrix)

12. RANDOM SAMPLING

- random_sample = np.random.choice(arr, size=3, replace=False)

13. AVOIDING COPY

- new_arr = arr.copy()

14. HANDLING NAN

- has_nan = np.isnan(arr).any()

15. VECTORIZED OPERATIONS

- result = np.sin(arr)

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