DECODING
DATA SCIENCE

NUMPY

Cheat Sheet

NAS.IO/ARTIFICIALINTELLIGENCE

1. Basic Commands

Importing NumPy and checking its version:

```
import numpy as np

print(np.__version__)
```

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2. Array Creation

Creating NumPy arrays from lists and with initial placeholders:

```
# From a list
arr = np.array([1, 2, 3, 4, 5])

# Array of zeros
arr = np.zeros((3, 3))

# Array of ones
arr = np.ones((3, 3))

# Array with a range of values
arr = np.arange(0, 10)

# Array of random values
arr = np.random.rand(3, 3)
```

3. Array Attributes

Getting an array's shape and data type:

```
arr = np.array([[1, 2, 3], [4, 5, 6]])

# Shape
print(arr.shape)

# Data type
print(arr.dtype)
```

4. Indexing and Slicing

Indexing and slicing one-dimensional and multi-dimensional arrays:

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

# Get the first element
print(arr[0])

# Get the last element
print(arr[-1])

# Get a slice from the second to the fourth element
print(arr[1:4])S
```

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5. Array Manipulation

Various ways to manipulate arrays such as reshaping, stacking, and splitting:

```
arr = np.array([[1, 2, 3], [4, 5, 6]])

# Reshape

arr_reshaped = arr.reshape((3, 2))

# Vertical stack

arr_stack = np.vstack([arr, arr])
```

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6. Arithmetic Operations

Performing addition, subtraction, multiplication, division, and dot product on arrays:

```
arr1 = np.array([1, 2, 3])
arr2 = np.array([4, 5, 6])

# Addition print
(arr1 + arr2)

# Subtraction print
(arr1 - arr2)

# Multiplication print
(arr1 * arr2)

# Division print
(arr1 / arr2)S
```

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7. Statistical Operations

Calculating the mean, median, and standard deviation of an array:

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

# Mean
print(np.mean(arr))

# Median
print(np.median(arr))

# Standard deviation
print(np.std(arr))
```

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