Mean of datasets

Practice Quiz, 6 questions

6/6 points (100%)

Congratulations! You passed!

Next Item

1 / 1 point

1.
What is the mean of the dataset $\mathcal{D} = \{1, 2, 3\}$?

Do the exercises using pen and paper.

- [x] 2

Correct
That's it. Good job!

- [ ] 6
- [ ] 3

---

1 / 1 point

2.
Compute the mean of the following dataset:

$$\mathcal{D} = \left\{ \begin{bmatrix} 1 \\ 4 \\ 7 \end{bmatrix}, \begin{bmatrix} 2 \\ 5 \\ 8 \end{bmatrix}, \begin{bmatrix} 3 \\ 6 \\ 9 \end{bmatrix} \right\}$$

Do the exercises using pen and paper.

- [ ] $\begin{bmatrix} -2 \\ -5 \\ -8 \end{bmatrix}$
- [x]

$\begin{bmatrix} 2 \\ 3 \\ 8 \end{bmatrix}$

Correct
Well done!

$\begin{bmatrix} 6 \\ 15 \\ 24 \end{bmatrix}$

---

1 / 1 point

3.
What is the mean of the following dataset, **after** multiplying each sample in the dataset by 2?

$\mathcal{D} = \left\{ \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}, \begin{bmatrix} 3 \\ 4 \\ 5 \end{bmatrix}, \begin{bmatrix} 5 \\ 3 \\ 1 \end{bmatrix} \right\}$

$\begin{bmatrix} 6 \\ 6 \\ 6 \end{bmatrix}$

Correct
Well done!

$\begin{bmatrix} 3 \\ 3 \\ 3 \end{bmatrix}$

$\begin{bmatrix} 18 \\ 18 \\ 18 \end{bmatrix}$

---

1 / 1 point

4.

6/6 points (100%)

What is the mean of the following dataset, **after** adding $\begin{bmatrix}1\\2\\3\end{bmatrix}$ to each sample in the following dataset?

$$\mathcal{D} = \left\{ \begin{bmatrix}1\\2\\3\end{bmatrix}, \begin{bmatrix}3\\4\\5\end{bmatrix}, \begin{bmatrix}5\\3\\1\end{bmatrix} \right\}$$

- $\begin{bmatrix}2\\1\\0\end{bmatrix}$
- ✓ $\begin{bmatrix}4\\5\\6\end{bmatrix}$

Correct
Well done!

- $\begin{bmatrix}3\\3\\3\end{bmatrix}$

---

1 / 1 point

5.
Assuming that we know the mean $\bar{x}_{n-1}$ of a dataset $\mathcal{D}_{n-1}$ with $n-1$ data points. Now, suppose that we collect another data point, which we denote by x_*. Select the correct formula that computes the correct new mean $\bar{x}_n$ of the full data set $\mathcal{D}_n = \mathcal{D}_{n-1} \cup \{x_*\}$, i.e., we add x_* to the dataset $\mathcal{D}$.

- $\bar{x}_n = \bar{x}_{n-1} + \frac{1}{n+1}(\bar{x}_{n-1} - x_*)$
- ✓ $\bar{x}_n = \bar{x}_{n-1} + \frac{1}{n}(x_* - \bar{x}_{n-1})$

Correct
Excellent!

- $\bar{x}_n = \bar{x}_{n-1} + \frac{1}{n+1}(x_* - \bar{x}_{n-1})$
- $\bar{x}_n = \bar{x}_{n-1} + \frac{1}{n-1}(x_* - \bar{x}_{n-1})$

Mean of datasets

Practice Quiz, 6 questions

1 / 1 points

6/6 points (100%)

6.

Assuming you are given an image as a two dimensional array of shape 28 x 28. Write a small piece of python code to reshape this image to a vector of length 784 (=28 x 28).

Hint: This can be a one-liner.

```
import numpy as np

def reshape(x):
  """return x_reshaped as a flattened vector of the multi-dimensional array x"""
  x_reshaped = np.reshape(x, (-1,))
  return x_reshaped

```

Run

Reset

Correct Response

Good job!