

- ❑ **K Fold Cross Validation**
- ❑ **Under-fitting**
- ❑ **Over-fitting**





K Fold Cross Validation

Cross-validation is a resampling procedure used to evaluate machine learning models on a limited data sample.

The procedure has a single parameter called k that refers to the number of groups that a given data sample is to be split into.

Training

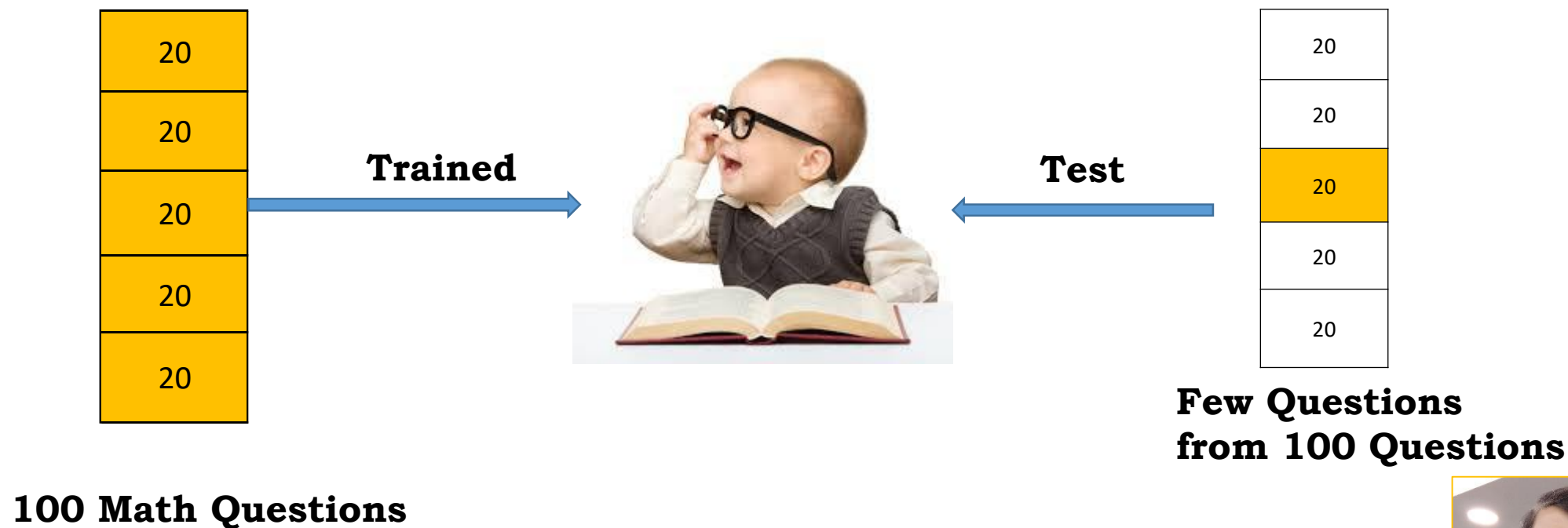
20
20
20
20
20

100 Math Questions



K Fold Cross Validation

Option-1 Re-Substitution



K Fold Cross Validation

Option-2 Holdout

20
20
20
20
20

Trained



Test

20

**20 Questions
from 100 Questions**

**80 Math Questions
From 100 Questions**

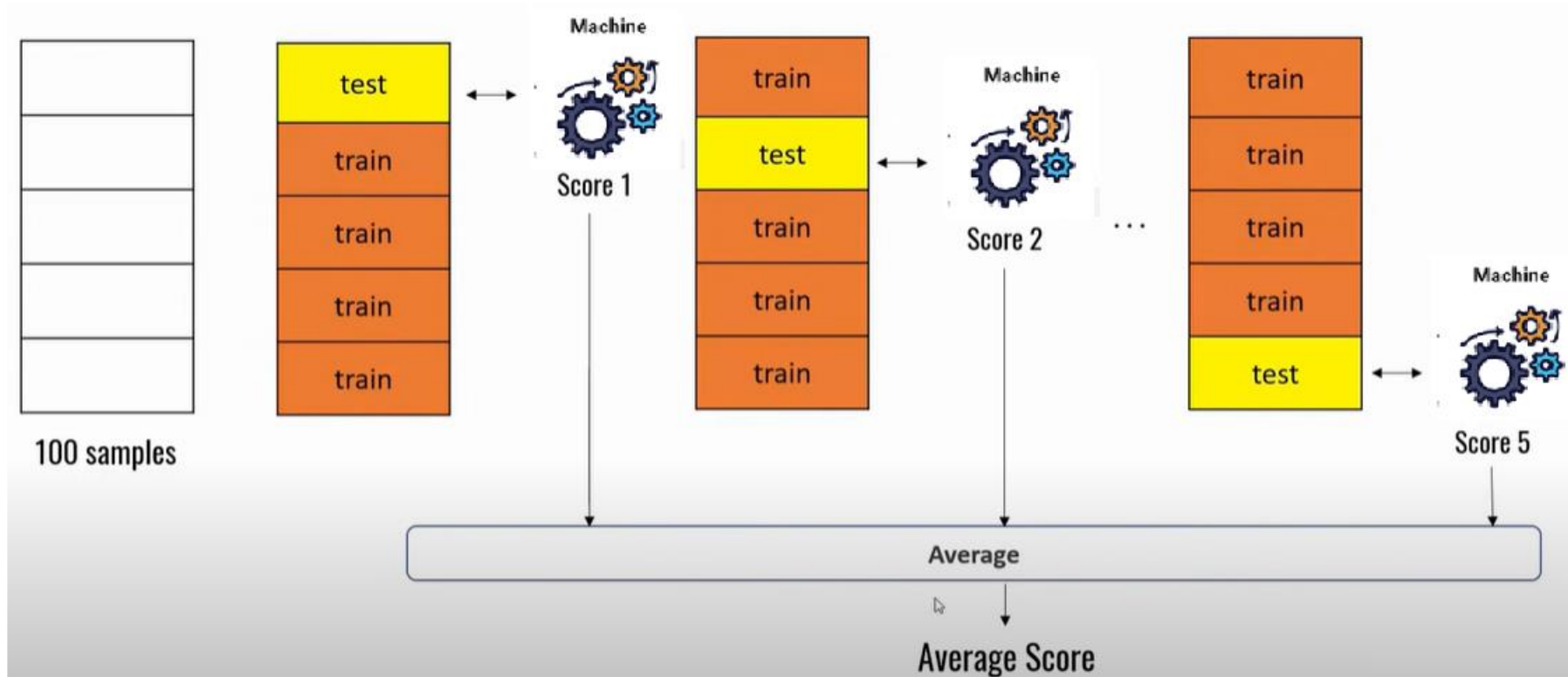


K Fold Cross Validation

Option-3

K Fold Cross Validation

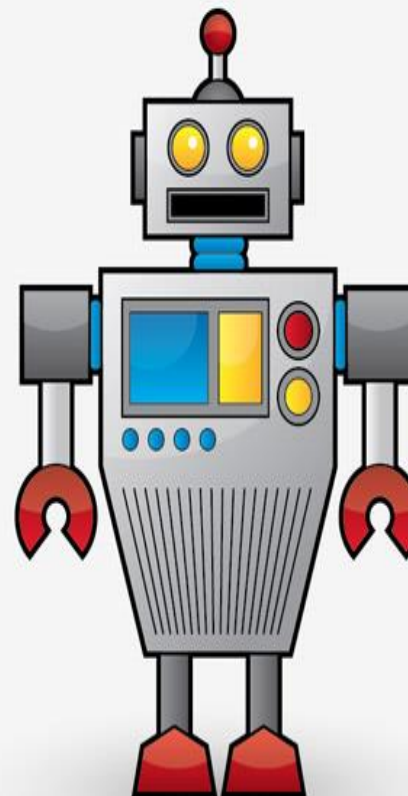
Here, $K=5$



Underfitting

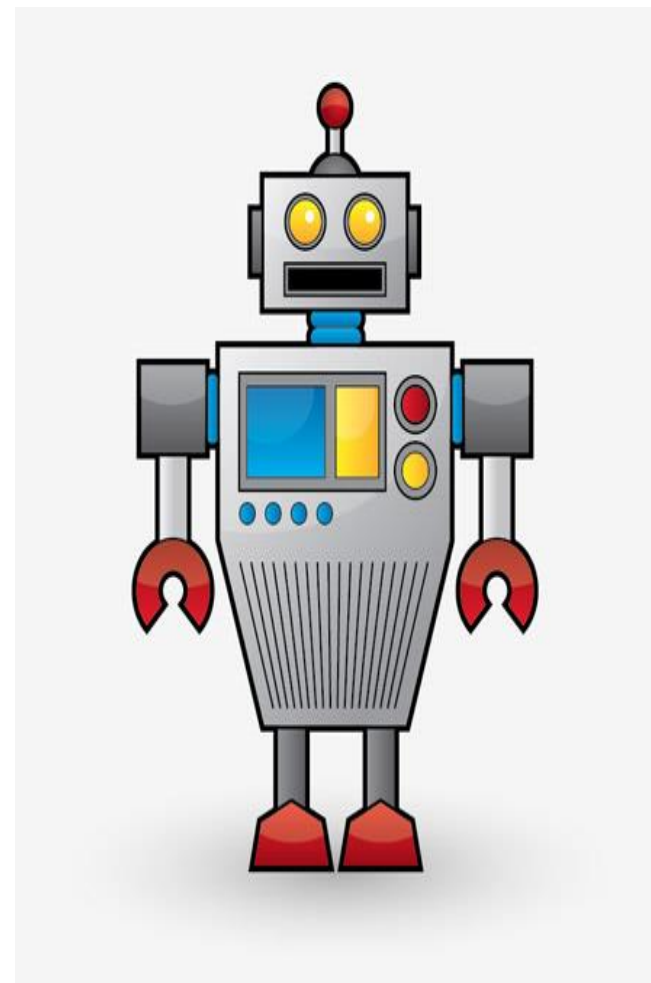
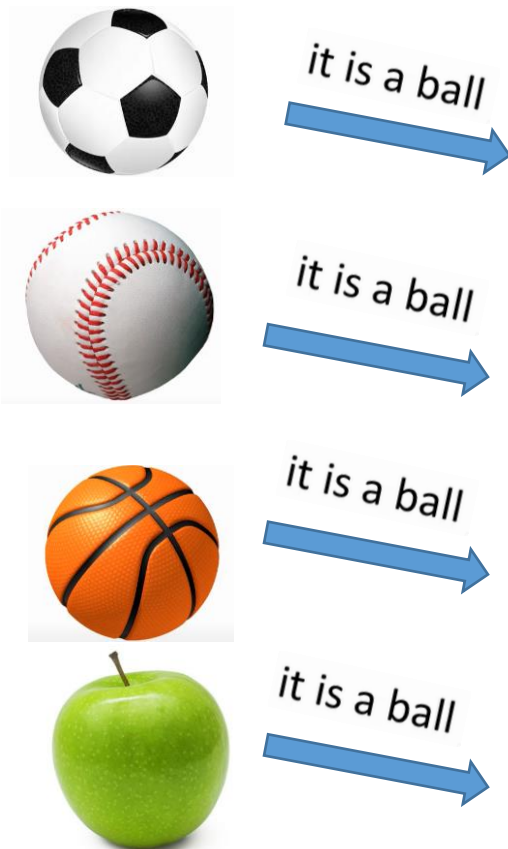


hey!
these are balls.
you can see,
all of these are
round shape.



Underfitting

Test



Underfitting

Option-2 Holdout

20
20
20
20
20

Trained



Test



20

**20 Questions
from 100 Questions**

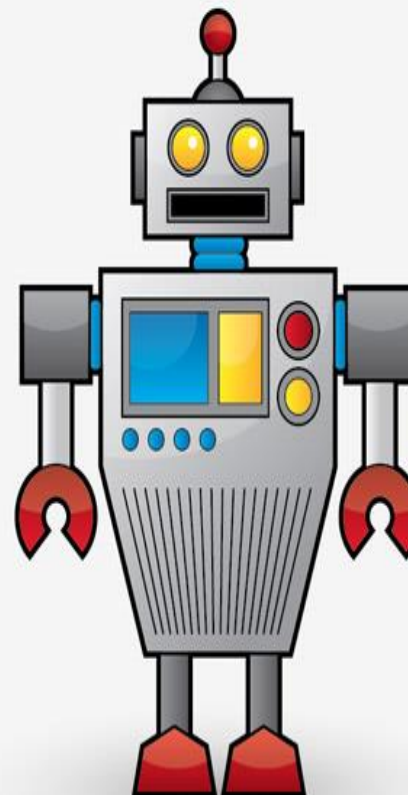
**80 Math Questions
From 100 Questions**



Underfitting

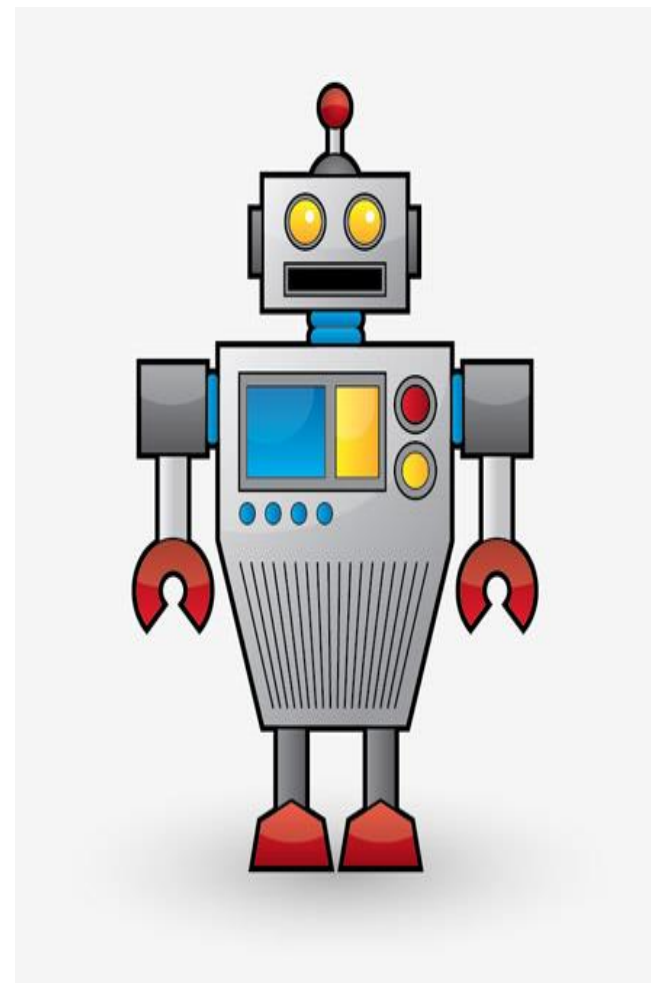
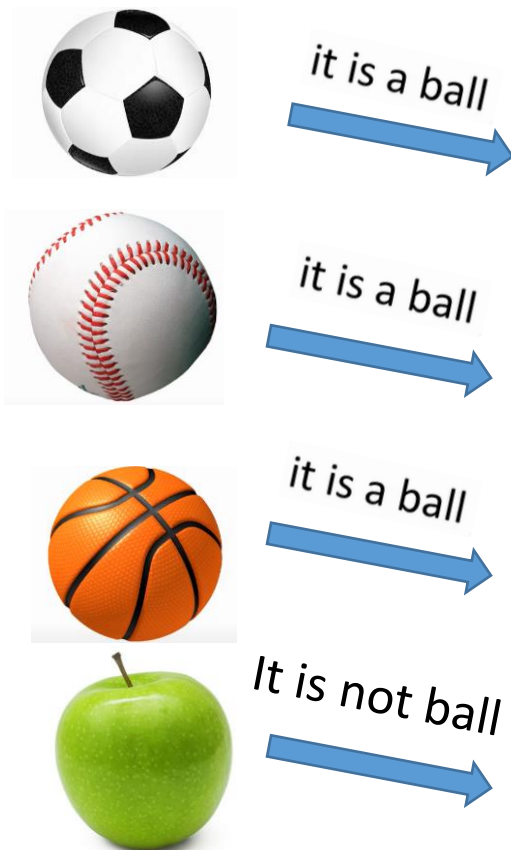


- round shape
- you cannot eat ball
- you can play with ball



Solved Underfitting

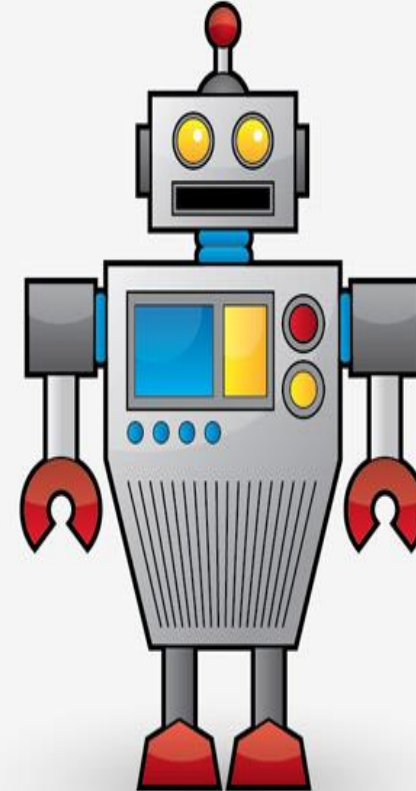
Test



Overfitting



- round shape
- you cannot eat ball
- you can play with ball
- ball has stitch
- greater than 70mm in diameter



Overfitting

Test



it is a ball



it is a ball



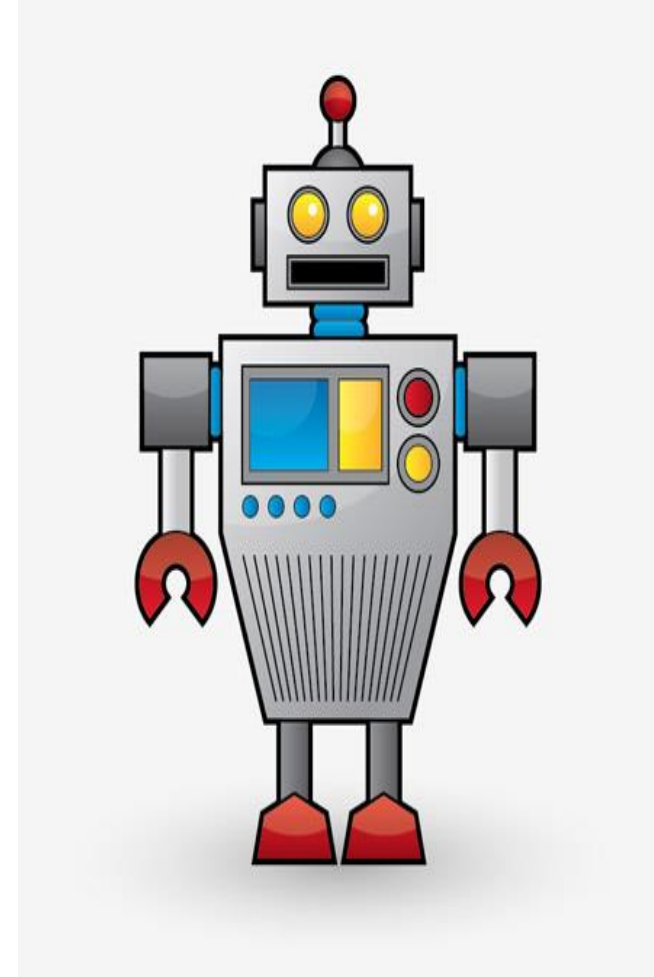
it is a ball



It is not ball



It is not ball



Overfitting

Option-1 Re-Substitution

