

The use of ground-truth dataset for machine learning

* Without parameter tuning (no validation set)

Training set	Test set
--------------	----------

* With parameter tuning (validation set)

Training set	Validation	Test set
--------------	------------	----------

K-fold cross validation w/o parameter tuning (no validation set)

k == 3

Training set		Test set
Training set	Test set	Training set
Test set	Training Set	

K-fold cross validation with parameter tuning (validation set)

k == 3

Training set	Validation	Test set
Validation	Test set	Training set
Test set	Training set	Validation

K*I -fold nested cross validation with parameter tuning (validation)

k == 3

l == 2

Training set	Validation	Test set
Validation	Training set	
Test set	Training set	Validation
	Validation	Training set
Validation	Test set	Training set
Training set		Validation

K-fold cross validation with parameter tuning (validation set)

k == 5

Training set	Training set	Training set	Validation	Test set
Training set	Training set	Validation	Test set	Training set
Training set	Validation	Test set	Training set	Training set
Validation	Test set	Training set	Training set	Training set
Test set	Training set	Training set	Training set	Validation

K*I -fold nested cross validation with parameter tuning (validation)

k == 5

l == 2

Training set	Training set	Validation	Validation	Test set
Validation	Validation	Training set	Training set	
Training set	Training set	Validation	Test set	Validation
Validation	Validation	Training set		Training set
Training set	Validation	Test set	Validation	Training set
Validation	Training set		Training set	Validation
Validation	Test set	Validation	Training set	Training set
Training set		Training set	Validation	Validation
Test set	Training set	Training set	Validation	Validation
	Validation	Validation	Training set	Training set

K*I -fold nested cross validation with parameter tuning (validation)

k == 5

l == 4

Training set	Training set	Training set	Validation	Test set
Training set	Training set	Validation	Training set	
Training set	Validation	Training set	Training set	
Validation	Training set	Training set	Training set	
Training set	Training set	Validation	Test set	Training set
Training set	Validation	Training set		Training set
Validation	Training set	Training set		Training set
Training set	Training set	Training set		Validation
Training set	Validation	Test set	Training set	Training set
Validation	Training set		Training set	Training set
Training set	Training set		Training set	Validation
Training set	Training set		Validation	Training set
Validation	Test set	Training set	Training set	Training set
Training set		Training set	Training set	Validation
Training set		Training set	Validation	Training set
Training set		Validation	Training set	Training set
Test set	Training set	Training set	Training set	Validation
	Training set	Training set	Validation	Training set
	Training set	Validation	Training set	Training set
	Validation	Training set	Training set	Training set