

OVER-FITTING

- Basic concepts
- Definition.
- How to limit overfitting

OVER-FITTING

Basic Concepts

Generalization of Machine Learning:

- Try to predict the future event (output) Y from the present events (input) X .
- General model : $Y = f(X)$.
- Need to find function f from training data set Y and X , respectively.

OVER-FITTING

Basic Concepts

Three possibilities of function f :

- Good fit
- Under-fitting
- Over-fitting

OVER-FITTING

Basic Concepts

Three possibilities of function f :

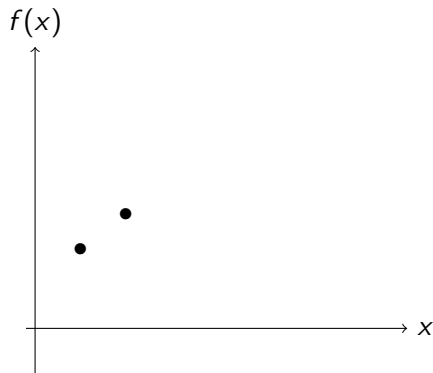
- Good fit
- Under-fitting
- **Over-fitting** : Studying likes a parrot



OVER-FITTING

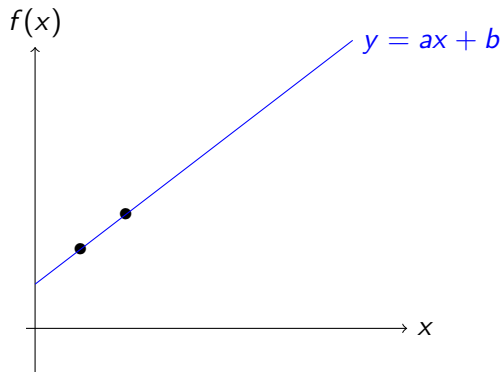
OVER-FITTING

Definition



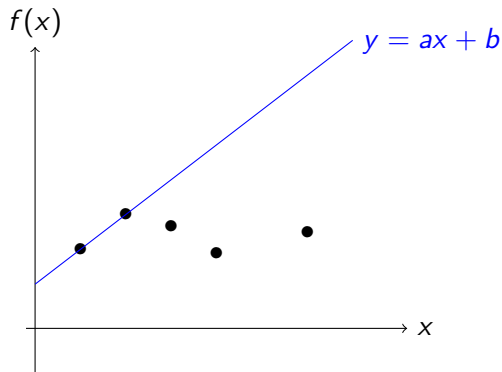
OVER-FITTING

Definition



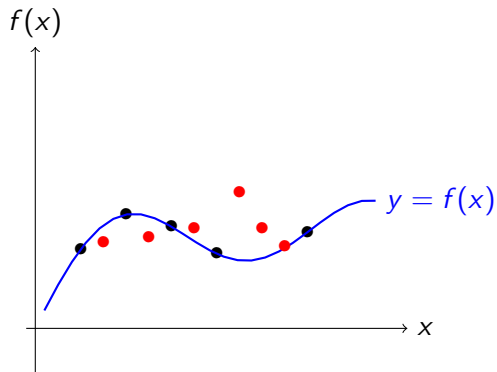
OVER-FITTING

Definition



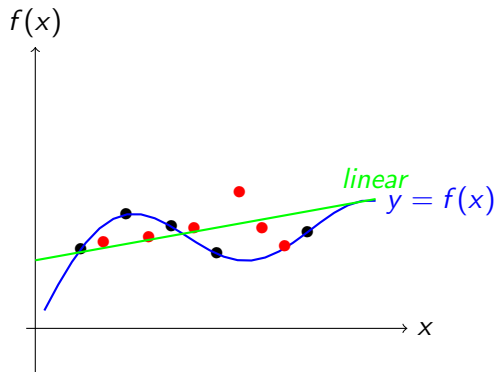
OVER-FITTING

Definition



OVER-FITTING

Definition



OVER-FITTING

How to limit overfitting

Reduce the network's capacity remove layers or reduce the number of elements in the hidden layers.

OVER-FITTING

How to limit overfitting

Reduce the network's capacity remove layers or reduce the number of elements in the hidden layers.

Apply regularization add a cost to the loss function for large weights.

OVER-FITTING

How to limit overfitting

Cross-validation

Reduce the network's capacity Remove layers or reduce the number of elements in the hidden layers.

Apply regularization Add a cost to the loss function for large weights.

Add dropout layers Randomly remove certain features by setting them to zero.

OVER-FITTING

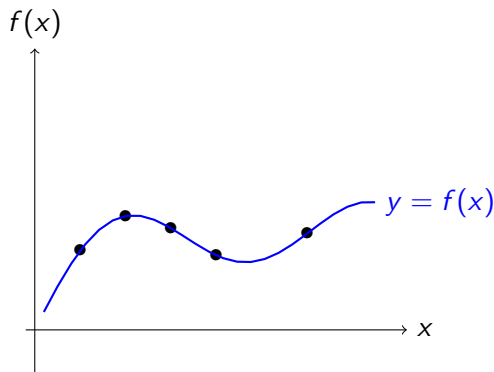
How to limit overfitting

Cross-validation

Reduce the network's capacity Remove layers or reduce the number of elements in the hidden layers.

Apply regularization Add a cost to the loss function for large weights.

Add dropout layers Randomly remove certain features by setting them to zero.



OVER-FITTING

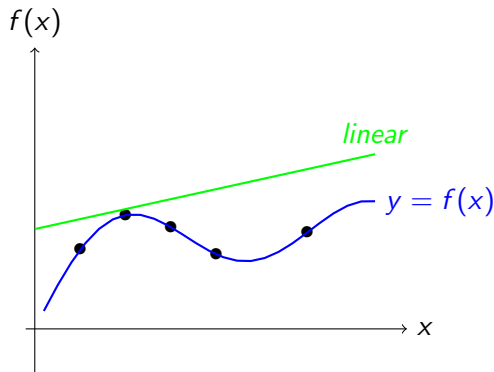
How to limit overfitting

Cross-validation

Reduce the network's capacity Remove layers or reduce the number of elements in the hidden layers.

Apply regularization Add a cost to the loss function for large weights.

Add dropout layers Randomly remove certain features by setting them to zero.



OVER-FITTING

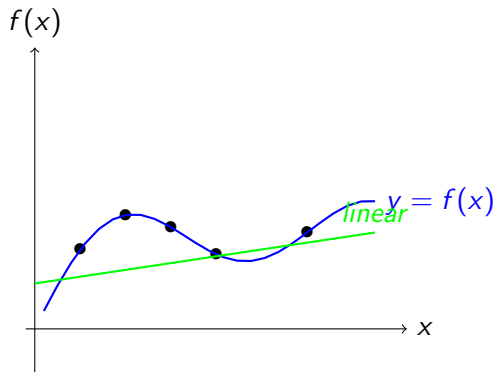
How to limit overfitting

Cross-validation

Reduce the network's capacity Remove layers or reduce the number of elements in the hidden layers.

Apply regularization Add a cost to the loss function for large weights.

Add dropout layers Randomly remove certain features by setting them to zero.



OVER-FITTING

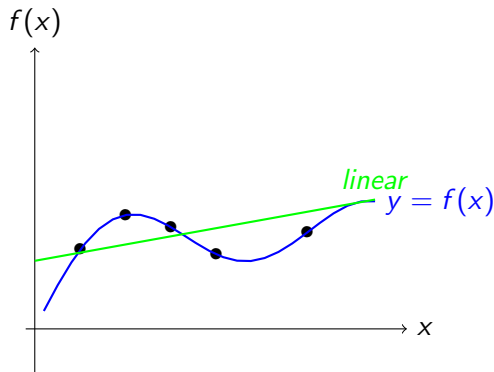
How to limit overfitting

Cross-validation

Reduce the network's capacity Remove layers or reduce the number of elements in the hidden layers.

Apply regularization Add a cost to the loss function for large weights.

Add dropout layers Randomly remove certain features by setting them to zero.



OVER-FITTING

How to limit overfitting

Cross-validation

Reduce the network's capacity Remove layers or reduce the number of elements in the hidden layers.

Apply regularization Add a cost to the loss function for large weights.

Add dropout layers Randomly remove certain features by setting them to zero.

