6. Introduction to Classifiers: Let's bring in some geometry!

Exercises due Sep 23, 2020 05:29 IST *Completed*

Introduction to Linear Classifiers

0:00 / 0:00 1.25x

Start of transcript. Skip to the end.

Now let's look at this a little bit more geometrically.

Those examples.

x here.

I have x1 represented as a point in space.

It's vector has a representation as a point in space

Video
Download video file

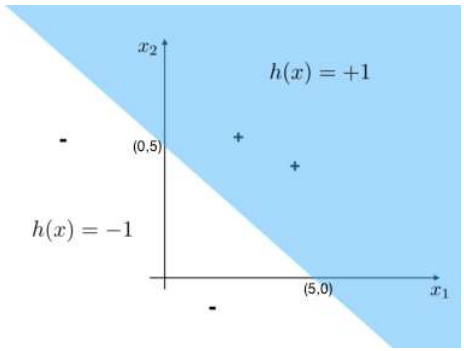
Transcripts
Download SubRip (.srt) file
Download Text (.txt) file

Training data can be graphically depicted on a (hyper)plane. **Classifiers** are **mappings** that take **feature vectors as input** and produce **labels as output**. A common kind of classifier is the **linear classifier**, which linearly divides space(the (hyper)plane where training data lies) into two. Given a point x in the space, the classifier h outputs $h(x) = 1$ or $h(x) = -1$, depending on where the point x exists in among the two linearly divided spaces.

Linear Classifier

1/1 point (graded)

We have a linear classifier h that takes in any point on a two-dimensional space. The linear classifier h divides the two-dimensional space into two, such that on one side $h(x) = +1$ and on the other side $h(x) = -1$, as depicted below.



For $x = (10, 10)$, would $h(x)$ be -1 or $+1$?

- (●) $+1$
- ( ) -1

✔

As an aside, classifiers need not be linear. They can be of any shape!

Submit You have used 1 of 2 attempts

Training Error

1/1 point (graded)

Suppose a classifier correctly classifies 5 points in the training set and 1 points in the test set. Suppose it incorrectly classifies 5 points in the training set and 2 points in the test set. What is the training error? Is it better than chance?

- (●) 0.5, equal to chance
- ( ) 0.46, worse than chance
- ( ) 0.55, better than chance
- ( ) 0.33, worse than chance

✔

Submit You have used 1 of 3 attempts

Hypothesis Space

1/1 point (graded)

What is the meaning of the "hypothesis space"?

- ( ) the set of test points
- (●) the set of possible classifiers
- ( ) the set of training points
- ( ) the positive test examples

✔

Submit You have used 1 of 3 attempts

Discussion

Hide Discussion

Topic: Unit 1 Linear Classifiers and Generalizations (2 weeks):Lecture 1. Introduction to Machine Learning / 6. Introduction to Classifiers: Let's bring in some geometry!

Add a Post

Show all posts by recent activity

? Training set equation

At 2:20 sec what does R^2 {-1,1} mean in the given equation for training set equation

2