2. Review of Basic Concepts

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

Review of Basic Concepts

And you're supposed to learn irregularity between the two

in order to make predictions for future examples, or inputs,

or feature vectors x.

So the training set, as we've already seen,

is denoted by S subscript n, where

n refers to the number of training examples that we have.

And it is a collection of pairs of the input feature vector

where the superscript i denotes the i-th example

and the corresponding label.

And we assume that we have some number n of them.

So that is the task as given to the algorithm.

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$[\![A]\!]$ either takes value 1 or 0 depending on whether A is True or False. For example, $[\![1=3]\!]=0$, $[\![1=1]\!]=1$, and $[\![1\neq 3]\!]=1$

Concept Review Problem: car accident prediction 1

1/1 point (graded)

In this problem, we will put ourselves in the shoes of a car insurance company. Our goal is to find out whether customers were involved in an accident on July 4th, 1998.

For 8 customers, we know the following information:

1. number of accidents the customer made in the past.
2. number of miles the customer has driven.
3. the customer's age

Also, for 5 of the customers, we know whether each of them was involved in an accident on July 4th, 1998.

If we want to learn a model in a supervised way, what is n, the number of training examples?

$n =$ 5 ✔

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Concept Review Problem: car accident prediction 2

1/1 point (graded)

1/1 point (graded)

The insurance company recorded relevant information for all 8 customers, as illustrated in the table below.

	number of past accidents	miles customer drove so far	customer's age
customer 1	0	2710.9	21
customer 2	2	13209.2	40
customer 3	1	89001.4	32
customer 4	3	12381.1	18
customer 5	0	1893.5	24
customer 6	2	32493.5	24
customer 7	1	5443.5	30
customer 8	0	4493.5	28

What is the dimension of each feature vector?

$d =$ 3 ✔

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Concept Review Problem: car accident prediction 3

1/1 point (graded)

How many feature vectors are there in the above table?

Number of Feature vectors 8 ✔

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Concept Review Problem: Classifier and Training Error 1

1/1 point (graded)

Assume we have training data and a classifier like the following: (where $h(x)$ denotes the value outputted by the classifier with the data point as input)

	$h(x)$	y
data 1	1	1
data 2	-1	1
data 3	1	1
data 4	1	-1
data 5	-1	-1

What is the training error?

$\varepsilon_n(h) =$ 0.4 ✔

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Concept Review Problem: Classifier and Training Error 2

1/1 point (graded)

Now let's examine the training error $\varepsilon_n(h)$ in a general sense. $\varepsilon_n(h)$ is a function of: (choose all those apply)

- [x] n, the number of training data
- [x] h, the classifier
- [ ] the number of test data

✔

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