4. Linear Separation

Exercises due Feb 15, 2023 08:59 -03 Completed

Linear Separation

0:00 / 0:00 1.0x

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Given θ and θ_0, a **linear classifier** $h : X \to \{-1, 0, +1\}$ is a function that outputs +
positive, 0 if it is zero, and -1 if it is negative. In other words, $h(x) = \text{sign}(\theta \cdot x + \theta$

Basics 1

1/1 point (graded)
As described in the lecture above, h is a linear classifier which is defined by the bound
theta is a vector perpendicular to the plane.) The ith training data is $(x^{(i)}, y^{(i)})$, where
is a scalar quantity. If θ is a vector of the same dimension as $x^{(i)}$, what are $y^{(i)}$ and sig

- output of the classifier h, label
- label, dimension of the feature vector

- [x]
- [x]
- [ ]
- [ ]

✔

Submit You have used 2 of 3 attempts

Basics 3

1/1 point (graded)

For the th training data , what values can take? Choose all thos

- [x]
- [x]
- [x]
- [ ]

✔

Submit You have used 1 of 3 attempts

When the Product is Positive

1/1 point (graded)

When does happen? Choose all those apply.

- [x] and
- [ ]

- (●) label and classified result match
- ( ) label and classified result do not match
- ( ) is on the boundary of the classifier
- ( ) training error is positive

✔

Submit You have used 2 of 2 attempts

Intuitive Meanings of Negative Product

1/1 point (graded)

What is the intuitive meaning of ?

- ( ) label and classified result match
- (●) label and classified result do not match
- ( ) is on the boundary of the classifier
- ( ) training error is negative

✔

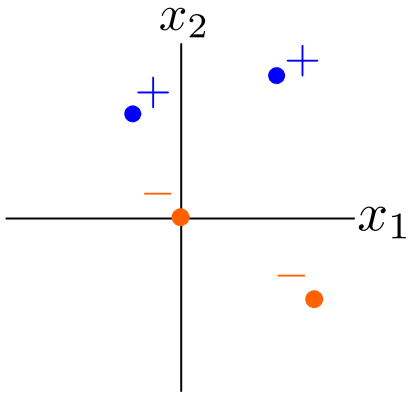
Submit You have used 1 of 1 attempt

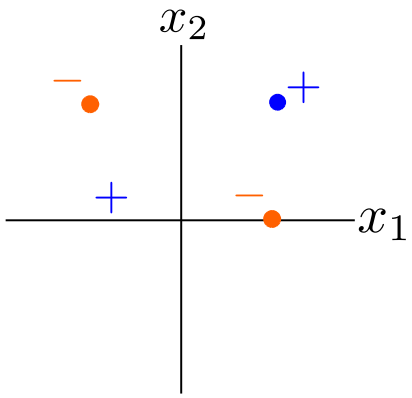
Linear Separation 1

1/1 point (graded)

Of the following, which is linearly separable? Choose all those apply.

- [✓] x_2





Submit You have used 1 of 2 attempts

Linear Separation 2

1/1 point (graded)

A set of Training examples is illustrated in the table below, with the classified result by and the label . Is it linearly separable?

example 1	-1	-1
example 2	1	1
example 3	1	1
example 4	-1	-1

Topic: Unit 1. Linear Classifiers and Generalizations (2 weeks):Lecture 2. Linear Classifier and Perceptron / 4. Linear Separation

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- [Staff] Linear Separation 1
  I believe there is a bug in the last picture - blue point missing near blue cross (almost missed that)
- [Staff] error in transcript
  In the transcript of the video, at 2:50, Professor Jaakkola says "sign", but it is transcribed as "sine". Small erro
- Is the definition wrong?
- how can i get extension of due date?
  how can i get extension of due date?
- For Basics 2 and 3
  Why cannot y(i) take 0 while sign(theta.x(i)) take 0?
- [Staff] Something wrong with my submissions to Basic 3.
  I fail to get it right after 3 attempts. I checked the answer and found that my first attempt was correct. Could
- Basics 3... I don't see what I am missing
  My approach to the problem: Theta can take any value as long as it is orthogonal to the decision boundary a
- Extra '}' in definition of Linear Separation in video
  "Training examples Sn = {...}" has an extra '}' on the slide in the video above ;o)
- Intuitive meanings of positive product?

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