3. Decision Boundaries

Homework due Feb 22, 2023 08:59 -03 Past due

In this problem, we will investigate the decision boundary of different classifiers.

3. (a)

2 points possible (graded)

Consider the function defined over three binary variables: $f(x_1, x_2, x_3) = (\neg x_1 \wedge -$

We aim to find a θ such that, for any $x = [x_1, x_2, x_3]$, where $x_i \in \{0, 1\}$:

$$\theta \cdot x + \theta_0 > 0 \text{ when } f(x_1, x_2, x_3) = 1, \text{ and}$$

$$\theta \cdot x + \theta_0 < 0 \text{ when } f(x_1, x_2, x_3) = 0.$$

If $\theta_0 = 0$ (no offset), would it be possible to learn such a θ?

- Yes
- No

Would it be possible to learn the pair θ and θ_0?

- Yes
- No

Submit You have used 0 of 3 attempts

3. (b-1)

1 point possible (graded)

Submit You have used 0 of 3 attempts

3. (b-2)

2 points possible (graded)

Inside (positive) or outside (negative) of an -centered circle with radius .

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Submit You have used 0 of 3 attempts

3. (b-3)

1 point possible (graded)

Strictly above (positive) or below (negative) a line through the origin with normal . Her , and define "below" similarly. **Note:** Please enter a list for as . If ther

Submit You have used 0 of 3 attempts

3. (b-4)

2 points possible (graded)

Strictly above (positive) or below (negative) a line with normal and offset . Here we , and define "below" similarly. **Note:** If there is no solution, enter

:

- [ ] Strictly above or below a line through the origin with normal .
- [ ] Strictly above or below a line with normal and offset .

Submit You have used 0 of 2 attempts

Discussion

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Topic: Unit 1. Linear Classifiers and Generalizations (2 weeks):Homework 1 / 3. Decision Boundaries