6. The Realizable Case - Quadratic program

Exercises due Sep 30, 2020 05:29 IST *Completed*

The Realizable Case - Quadratic program

Start of transcript. Skip to the end.

We can also solve the problem by actually solving

the optimization problem.

So for example, if we take the simple case

where we don't allow any errors, the problem

is linearly separable and we don't allow any errors.

0:00 / 0:00 1.25x

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The realizable case 1

1/1 point (graded)

In the realizable case, which of the following is true?

- There is exactly one (θ, θ_0) that satisfies $y^{(i)}\left(\theta \cdot x^{(i)} + \theta_0\right) >= 1$ for $i = 1, \ldots n$.
- There are more than one, but finite number of (θ, θ_0) that satisfy $y^{(i)}\left(\theta \cdot x^{(i)} + \theta_0\right) >= 1$ for $i = 1, \ldots n$.
- There are infinitely many (θ, θ_0) that satisfy $y^{(i)}\left(\theta \cdot x^{(i)} + \theta_0\right) >= 1$ for $i = 1, \ldots n$.

Submit You have used 2 of 2 attempts

The realizable case 2

1/1 point (graded)

Remember the objective function

$$J(\theta, \theta_0) = \frac{1}{n}\sum_{i=1}^{n} \text{Loss}_h\left(y^{(i)}\left(\theta \cdot x^{(i)} + \theta_0\right)\right) + \frac{\lambda}{2} \mid\mid \theta \mid\mid^2$$

In the realizable case, we can always find (θ, θ_0) such that the sum of the hinge losses is 0. In this case, what does the objective function J reduce to?

$\frac{1}{n}\sum_{i=1}^{n} \text{Loss}_h\left(y^{(i)}\left(\theta \cdot x^{(i)} + \theta_0\right)\right)$

$\frac{1}{n}\sum_{i=1}^{n} \text{Loss}_h\left(y^{(i)}\left(\theta \cdot x^{(i)} + \theta_0\right)\right) + \frac{\lambda}{2}\,||\,\theta\,||^2$

$\frac{1}{2}\,||\,\theta\,||^2$

Submit You have used 1 of 2 attempts

Support Vectors

1/1 point (graded)

Support vectors refer to points that are exactly on the margin boundary. Which of the following is true? Choose all those apply.

- [ ] If we remove one point that is not a support vector, we will get a different θ, θ_0
- [x] If we remove all points that are support vectors, we will get a different θ, θ_0
- [ ] If we remove one point that is a support vector, we will get the same θ, θ_0
- [x] If we remove one point that is not a support vector, we will get the same θ, θ_0

Submit You have used 1 of 2 attempts

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Score Discrepancies 4
We have noticed a couple of incidents where there is a score discrepancy between what the student has received and what is shown...
Staff

[STAFF] I answered 9/11 in the entirety of the lecture 4, but it shows only 7/11 ? 1
Please help !

Support Vectors 1
Hello! I can understand the answers if I try to draw a sketch; But mathematically, how do we understand this? For example in stocha...

Packages to solve Quadratic Programming problems 1
Anybody knows the package names to solves quadratic programming problems.

Having trouble understanding Q1 3
Without wanting to give away the solution, I find this question a bit unclear. Based on the lecture, I thought in the realizable case we ...

Quadratic program 1
What does it mean exactly to have a quadratic program? And the professor mentioned that there is a slightly modified version of th...