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5. Stochastic Gradient Descent

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Exercises due Feb 22, 2023 08:59 -03 Completed

Stochastic Gradient Descent**Video**
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SGD and Hinge Loss

1/1 point (graded)

As we saw in the lecture above,

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

With stochastic gradient descent, we choose $i \in \{1, \dots, n\}$ at random and update θ

$$\theta \leftarrow \theta - \eta \nabla_{\theta} [\text{Loss}_h(y^{(i)} (\theta \cdot x^{(i)} + \theta_0)) + \frac{\lambda}{2} \|\theta\|^2]$$

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You have used 2 of 3 attempts

Comparison with Perceptron

1/1 point (graded)

Observing the update step of SGD,

Which of the following is true?

- ☐ As in perceptron, θ is not updated when there is no mistake
- ☒ Differently from perceptron, θ is updated even when there is no mistake

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Topic: Unit 1. Linear Classifiers and Generalizations (2 weeks):Lecture 4. Linear Classification and Generalization / 5. Stochastic Gradient Descent

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- ✓ Why does we update theta even if there is not mistake while doing stochastic gradient descent
I don't understand why does we update theta even if there is not mistake while doing stochastic gradient descent
- ? Another varying learning rate parameter question
Does having the learning rate parameter sum to 1 as the number of iterations goes to infinity **guarantee** t

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