Neural Networks: Learning

Quiz, 5 questions

5/5 points (100%)

✔ Congratulations! You passed!

Next Item

Question Responses

- ✔ Question 1
- ✔ Question 2
- ✔ Question 3
- ✔ Question 4
- ✔ Question 5

Review Materials

- **Backpropagation Algorithm**
- **Implementation Note: Unrolling Parameters**
- **Gradient Checking**
- **Cost Function**

✔ 1 / 1 points

Concepts

★ Use backpropagation to calculate the partial derivatives of the cost function

Backpropagation Algorithm (02:32)

1.
You are training a three layer neural network and would like to use backpropagation to compute the gradient of the cost function. In the backpropagation algorithm, one of the steps is to update

$$\Delta_{ij}^{(2)} := \Delta_{ij}^{(2)} + \delta_i^{(3)} * (a^{(2)})_j$$

for every i, j. Which of the following is a correct vectorization of this step?

✔ 1 / 1 points

Neural Networks: Learning

Quiz, 5 questions

5/5 points (100%)

Concepts

★ Explain how to unroll parameters into vectores in order to use advanced optimization functions

▶ **Implementation Note: Unrolling Parameters (00:02)**

2.

Suppose `Theta1` is a 5x3 matrix, and `Theta2` is a 4x6 matrix. You set `thetaVec` $=$ [`Theta1(:); Theta2(:)`]. Which of the following correctly recovers `Theta2`?

✔ 1 / 1 points

Concepts

★ Apply numerical gradient checking to validate whether the partial derivatives are correct in order to catch subtle bugs

▶ **Gradient Checking (01:55)**

3.

Let $J(\theta) = 2\theta^4 + 2$. Let $\theta = 1$, and $\epsilon = 0.01$. Use the formula $\frac{J(\theta+\epsilon)-J(\theta-\epsilon)}{2\epsilon}$ to numerically compute an approximation to the derivative at $\theta = 1$. What value do you get? (When $\theta = 1$, the true/exact derivative is $\frac{dJ(\theta)}{d\theta} = 8$.)

✔ 1 / 1 points

Concepts

★ Explain the backpropagation algorithm applied to a large training set

▶ **Backpropagation Algorithm (07:40)**

★ Explain the regularization term of the cost function for neural networks

▶ **Cost Function (05:06)**

4.

Which of the following statements are true? Check all that apply.

Neural Networks: Learning

Quiz, 5 questions

1/1 points

5/5 points (100%)

Concepts

- ★ Apply numerical gradient checking to validate whether the partial derivatives are correct in order to catch subtle bugs
  - ▶ **Gradient Checking (01:55)**
- ★ Explain the regularization term of the cost function for neural networks
  - ▶ **Cost Function (05:06)**

5.

Which of the following statements are true? Check all that apply.