¡Felicitaciones! ¡Aprobaste!

Calificación recibida 100 % Para Aprobar 80 % o más

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Feed-Forward Neural Networks

Calificación de la entrega más reciente: 100 %

1. A feedforward neural network has an input layer, 5 hidden layers and an output layer. What is the **depth** of this neural network? 1 / 1 punto

6

Correcto

2. During training, the training data specifies the exact form of the hidden layers of a neural network. 1 / 1 punto

- ○ True
- ◉ False

Correcto

3. Implement the ReLU activation function using numpy by replacing **None** in the code bellow. 2 / 2 puntos

```
import numpy as np

def ReLU(x):

  y = x*(x >=0 )

  return y
```

Ejecutar

Restablecer

Correcto

Good job!

4. The main building blocks of a machine learning system are: (Check all that apply.) 1 / 1 punto

- ☐ Output Layers
- ☐ Hidden layers
- ☑ A loss function

Correcto
Correct!

- ☑ A Model

Correcto
Correct!

- ☑ An Optimization Procedure

Correcto
Correct!

5. Which output unit/loss function pair is usually used for regression tasks that use neural networks? 1 / 1 punto

- ○ Sigmoid output units with Mean Squared Error Loss

- (●) Linear output units with Mean Squared Error Loss
- ( ) Linear output units with Cross-Entropy Loss
- ( ) Softmax output units with Cross-Entropy Loss

Correcto
Correct!

6. The softmax output layer with cross-entropy loss is used to model the mean of a Gaussian distribution. **1 / 1 punto**

- ( ) True
- (●) False

Correcto
Correct!

7. Which of the following might be used as a stopping condition for gradient descent. (Check all that apply.) **1 / 1 punto**

- [x] The magnitude of the change in parameter values

Correcto
Correct!

- [x] The magnitude of change in loss function value

Correcto
Correct!

- [x] The number of iterations or epochs

Correcto
Correct!

- [ ] The value of the training loss

8. How are neural network **bias** parameters usually initialized at the beginning of training? **1 / 1 punto**

- ( ) Initialized to -1.
- ( ) Initialized to samples from a standard normal distribution.
- ( ) Initialized to samples from a standard uniform distribution.
- (●) Initialized to 0.

Correcto

9. Using all samples to estimate the gradient of the loss function with respect to the parameter results in less than linear return in accuracy of this estimate. **1 / 1 punto**

- (●) True
- ( ) False

Correcto
Correct!

10. You are working on a self-driving car project and want to train a neural network to perform traffic sign classification. You collect images with corresponding traffic sign labels, and want to determine the number of frames you will use for training. Given that you have around **one million** images with labels, what training/validation/testing data split would you use? **1 / 1 punto**

- ( ) 60% training, 20% validation, 20% testing.
- (●) 96% training, 2% validation, 2% testing.
- ( ) 20% training, 40% validation, 40% testing.
- ( ) 100% training, 0% validation, 0% testing.

Correcto
Correct!

11. You finish training your traffic sign classifier, and want to evaluate its performance. You compute the classification accuracy on the training, validation, and testing data splits and get the following results: **2 / 2 puntos**

Data Split	Training	Validation	Testing
Accuracy	70%	68%	67%

You know that a human has an accuracy of around 98% on the traffic sign classification task. What are things you might try to achieve human level performance? (Check all that apply.)

- [x] Train your neural network longer.

Correcto
Correct!

- [ ] Add regularization to your neural network.
- [ ] Collect more training data.
- [x] Add more layers to your neural network.

Correcto
Correct!

12. When a neural network overfits the training data, the generalization gap is usually very small. **1 / 1 punto**

- ( ) True
- (•) False

Correcto
Correct!

13. Which of the following strategies are used for regularization in neural networks? (Check all that apply.) **1 / 1 punto**

- [x] Norm Penalties

Correcto
Correct!

- [ ] Training the neural network longer
- [x] Dropout

Correcto
Correct!

- [ ] Increasing the number of parameters in the neural network architecture
- [x] Early Stopping

Correcto
Correct!

14. Dropout significantly limit the type of neural network models that can be used, and hence is usually used for specific architectures. **1 / 1 punto**

- ( ) True
- (•) False

Correcto
Correct!

15. The name convolutional neural networks comes from the fact that these neural networks use a **convolution operation** instead of general matrix multiplication. **1 / 1 punto**

- True
- False

Correcto
Correct!

16. The input to a pooling layer has a **width, height and depth** of 224x224x3 respectively. The pooling layer has the following properties: **2 / 2 puntos**

- **Kernel shape:** 2x2
- **Stride**: 2

What is the width of the output of this pooling layer?

112

Correcto
Correct!

17. Using convolutions might reduce overfitting, as the number of parameters in convolutional layers is **less** than the number of parameters in fully connected layers. **1 / 1 punto**

- True
- False

Correcto
Correct!