hw\_05

**1. In the classification problem, when calculating the data’s information through the actual class distribution, how can the average for this information be calculated? (a)**

1. Calculate Entropy using information of distribution.
2. Calculate Cross-Entropy using information of distribution.
3. Calculate Entropy using the difference between information and distribution.
4. Calculate Cross-Entropy using the difference between information and distribution.

**2. Find entropy(H(p,p)) and cross entropy(H(p,q)). (c)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| probability | case1 | case2 | case3 | sum |
| true distribution (p) | 1/7 | 3/7 | 4/7 | 1 |
| guessed distribution (q) | 2/5 | 1/5 | 1/5 | 1 |

1. entropy = 0.417 , cross entropy = 0.460
2. entropy = 0.460, cross entropy = 0.627
3. entropy = 0.417 , cross entropy = 0.756
4. entropy = 0.460, cross entropy = 0.627

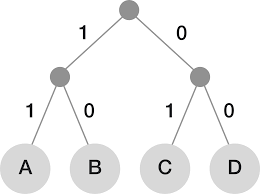
**3. What is the difference between mean squared error (MSE) and cross-entropy loss function in a neural network? (a)**

1. MSE is used for regression tasks, while cross-entropy is used for classification tasks
2. Cross-entropy is computationally more efficient compared to MSE
3. MSE is more interpretable compared to cross-entropy
4. Cross-entropy is less sensitive to outliers compared to MSE

**4. How do you choose the root node while constructing a Decision Tree? (b)**

1. An attribute having high entropy
2. An attribute having largest information gain
3. An attribute having high entropy and Information gain
4. None of the Mentioned

**5. Using Huffman-coding, what is the correct encoding of the letter C in this tree? (b)**



1. 11
2. 01
3. 00
4. 10