CZ4041: Tutorial Week 6

Due on February 18, 2021 at 8:30am

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Problem 1

On the 26th page of the lecture notes "Lecture 6a", for the two cases shown, whether we should perform post-pruning using pessimistic error, respectively?

Solution
Case 1:
Before Pruning:
$e(T) = 5$
$e'(T) = 5 + (2 * 0.5) = 6$

After Pruning:
$e(T) = 7$
$e'(T) = 7 + 0.5 = 7.5$

Therefore, post-pruning should not be performed

Case 1:
Before Pruning:
$e(T) = 5$
$e'(T) = 5 + (2 * 0.5) = 6$

After Pruning:
$e(T) = 5$
$e'(T) = 5 + 0.5 = 5.5$

Therefore, post-pruning should be performed

Problem 2

On the 11th page of the lecture notes "Lecture 6b", based on the five retreived instances shown in the table, using distance-weight voting approach to make a prediction on the test instance.

Solution

Votes for class label "+":
$(1/3^2) + (1/3.5^2) + (1/4^2) = 0.25524$

Votes for class label "-":
$(1/1.5^2) + (1/2^2) = 0.69444$

Therefore, test instance is classified as "-"