Haonan Hu

2/4/2021

2863545

Text

Description automatically generated

1. What is the k value in”k -fold cross-validation”?

**3**

1. Create a confusion matrix for the test results.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Actual Cat | Actual Dog | Actual Fox |
| Predict Cat | 3 | 3 | 1 |
| Predict Dog | 1 | 3 | 0 |
| Predict Fox | 0 | 2 | 2 |

1. Show the formulas and calculate the value of the following metrics:
   * 1. Accuracy = sum of diagonal / total samples = (3 + 3 + 2) / 15 = 8 / 15 ~= 0.533
     2. Pcat = correct cat / total cat prediction = 3 / (3 + 3 + 1) = 3 / 7 ~= 0.429
     3. Pdog = correct dog / total dog prediction = 3 / (1 + 3 + 0) = 3 / 4 = 0.75
     4. Pfox = correct fox / total fox prediction = 2 / (0 + 2 + 2) = 2 / 4 = 0.5
     5. Rcat = correct cat / total actual cats = 3 / (3 + 1) = 3 / 4 = 0.75
     6. Rdog = correct dog / total actual dogs = 3 / (3 + 3 + 2) = 3 / 8 = 0.375
     7. Rfox = correct fox / total actual foxes = 2 / (1 + 2) = 2 / 3 ~= 0.67
     8. F1cat = 2(Pcat \* Rcat) / (Pcat + Rcat) = 2\*0.429\*0.75 / (0.429 + 0.75) ~= 0.54*6*
     9. F1dog = 2(Pdog \* Rdog) / (Pdog + Rdog) = 2 \* 0.75 \* 0.375 / (0.375 + 0.75) =0.5
     10. F1dox = 2(Pfox \* Rfox) / (Pfox + Rfox) = 2 \* 0.5 \* 0.67 / (0.5 + 0.67) = 0.573