Congratulations! You passed!

Grade received 93.33%

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Go to next item

1/1 point

1. Problem Statement

This example is adapted from a real production application, but with details disguised to protect confidentiality.



You are a famous researcher in the City of Peacetopia. The people of Peacetopia have a common characteristic: they are afraid of birds. To save them, you have **to build an algorithm that will detect any bird flying over Peacetopia** and alert the population.

The City Council gives you a dataset of 10,000,000 images of the sky above Peacetopia, taken from the city's security cameras. They are labeled:

- y = 0: There is no bird on the image
- y = 1: There is a bird on the image

Your goal is to build an algorithm able to classify new images taken by security cameras from Peacetopia.

There are a lot of decisions to make:

- What is the evaluation metric?
- How do you structure your data into train/dev/test sets?

Metric of succes

The City Council tells you that they want an algorithm that

- Has high accuracy.
- 2. Runs quickly and takes only a short time to classify a new image.
- 3. Can fit in a small amount of memory, so that it can run in a small processor that the city will attach to many different security cameras.

<u>Note</u>: Having three evaluation metrics makes it harder for you to quickly choose between two different algorithms, and will slow down the speed with which your team can iterate. True/False?

True

O False

∠⁷ Expand

⊘ Correct

2. The city asks for your help in further defining the criteria for accuracy, runtime, and memory. How would you suggest they identify the criteria?

1/1 point

- Suggest to them that they define which criterion is most important. Then, set thresholds for the other two.
- Suggest to them that they focus on whichever criterion is important and then eliminate the
- Suggest that they purchase more infrastructure to ensure the model runs quickly and

∠⁷ Expand

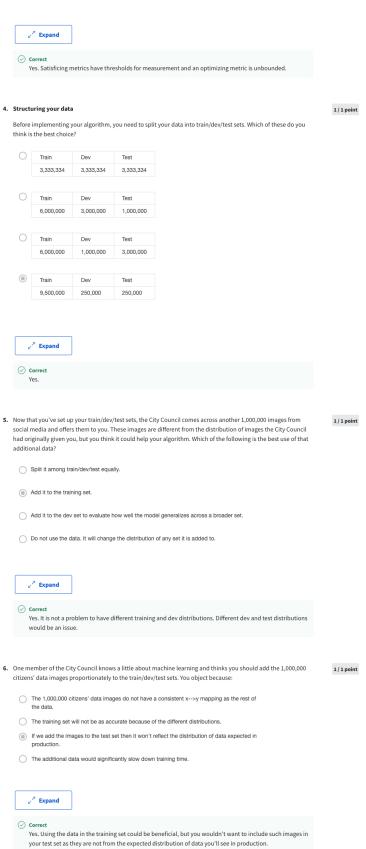
Correct

Yes. The thresholds provide a way to evaluate models head to head.

3. The essential difference between an optimizing metric and satisficing metrics is the priority assigned by the stakeholders. True/False?

1/1 point





7. You train a system, and its errors are as follows (error = 100%-Accuracy):

 Training seterror
 4.0%

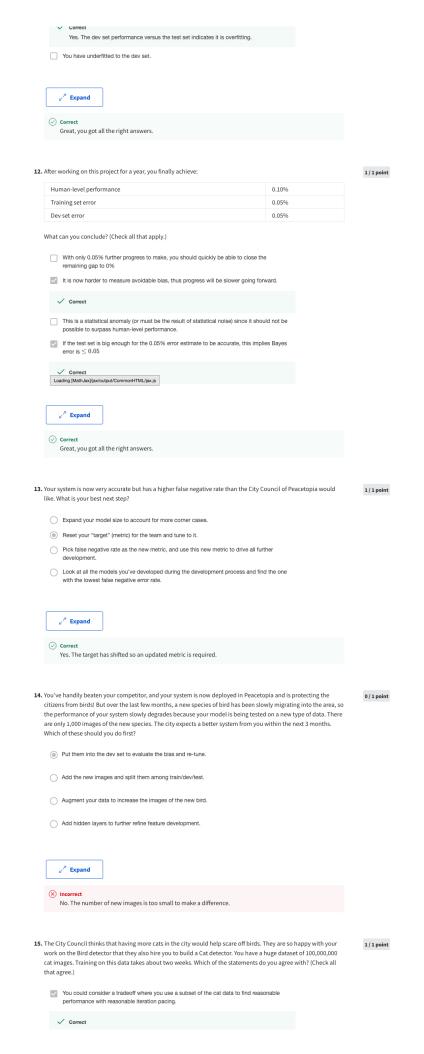
 Dev set error
 4.5%

1/1 point

This suggests that one good avenue for improving performance is to train a bigger network so as to drive down the 4.0% training error. Do you agree?

No, because this shows your variance is higher than your bias.

Yes, because this shows your bias is higher than your variance.	
No, because there is insufficient information to tell.	
Yes, because having a 4.0% training error shows you have a high bias.	
∠ ⁿ Expand	
⊙ Correct	
fou want to define what human-level performance is to the city council. Which of the following is the best answer?	1 / 1 poir
The average of all the numbers above (0.66%).	
The average performance of all their ornithologists (0.5%).	
The performance of their best ornithologist (0.3%).	
The average of regular citizens of Peacetopia (1.2%).	
∠ [®] Expand	
⊙ Correct	
Yes. The best human performance is closest to Bayes' error.	
A learning algorithm's performance can be better than human-level performance but it can never be better than Bayes error. True/False?	1/1 poin
○ False.	
(iii) True.	
∠ ⁿ Expand	
Correct Yes. By definition, human level error is worse than Bayes error.	
After working on your algorithm you have to decide the next steps. Currently, human-level performance is 0.1%,	1/1 poir
rraining is at 2.0% and the dev set is at 2.1%. Which, two of the following four, statements best describe your thought process?	
Address bias first through a larger model to get closest to human level error.	
✓ Correct	
Yes. Selecting the largest difference from (train set error - human level error) and (dev set error - train set error) and reducing bias or variance accordingly is the most productive step.	
Get a bigger training set to reduce variance.	
Decrease variance via regularization so training and dev sets have similar performance.	
☑ Decrease regularization to boost smaller signals.	
 ✓ Decrease regularization to boost smaller signals. ✓ Correct Yes. Blas is higher than variance. 	
✓ Correct	
✓ Correct	
✓ Correct Yes. Blas is higher than variance.	
✓ Correct Yes. Blas is higher than variance. ∠* Expand	
✓ Correct Yes. Blas is higher than variance.	1/1 poi
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✓ Correct Yes. Bias is higher than variance. ✓ Expand ✓ Correct Great, you got all the right answers. After running your model with the test set you find it is a 7.0% error compared to a 2.1% error for the dev set and	1/1 poir
✓ Correct Yes. Blas is higher than variance. ✓ Expand ✓ Correct Great, you got all the right answers. After running your model with the test set you find it is a 7.0% error compared to a 2.1% error for the dev set and 2.0% for the training set. What can you conclude? (Choose all that apply)	1/1 poli
✓ Correct Yes. Bias is higher than variance. ✓ Expand ✓ Correct Great, you got all the right answers. After running your model with the test set you find it is a 7.0% error compared to a 2.1% error for the dev set and 2.0% for the training set. What can you conclude? (Choose all that apply) ✓ You should try to get a bigger dev set. ✓ Correct	1/1 poi



Yes. This is similar to satisficing metrics where "good enough" determines the size of the data. Given a significant budget for cloud GPUs, you could mitigate the training time. Yes. More resources will allow you to iterate faster. Accuracy should exceed the City Council's requirements but the project may take as long as the bird detector because of the two week training/iteration time. Yes. The 10x size increase adds a small amount of accuracy but takes too much time. With the experience gained from the Bird detector you are confident to build a good Cat detector on the first try. ∠⁷ Expand