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**[Quiz:](https://www.coursera.org/learn/machine-learning-projects/exam/JBzL3/bird-recognition-in-the-city-of-peacetopia-case-study)**[Bird Recognition in the City of Peacetopia (Case Study)](https://www.coursera.org/learn/machine-learning-projects/exam/JBzL3/bird-recognition-in-the-city-of-peacetopia-case-study)

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* **Heroes of Deep Learning (Optional)**

1. [Week 1](https://www.coursera.org/learn/machine-learning-projects/home/week/1)
2. [Bird Recognition in the City of Peacetopia (Case Study)](https://www.coursera.org/learn/machine-learning-projects/exam/JBzL3/bird-recognition-in-the-city-of-peacetopia-case-study/view-attempt)

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**Bird Recognition in the City of Peacetopia (Case Study)**

**Submit your assignment**

DueNovember 29, 11:59 PM CSTNov 29, 11:59 PM CST

Attempts3 every 8 hours

Resume assignment

**Receive grade**

To Pass80% or higher

**Your grade**

86.66%

View Feedback

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**Bird Recognition in the City of Peacetopia (Case Study)**

Graded Quiz. • 1h 15m

English

DueNov 29, 11:59 PM CST

**Congratulations! You passed!**

Grade received 86.66%

Latest Submission Grade 86.67%

To pass 80% or higher

Go to next item

**1.**

Question 1

**Problem Statement**

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

水上的城堡

描述已自动生成

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 success**

The City Council tells you the following that they want an algorithm that

1. 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.

You are delighted because this list of criteria will speed development and provide guidance on how to evaluate two different algorithms. True/False?

Status: [object Object]

1 / 1 point

Expand

Correct

Yes. More than one metric expands the choices and tradeoffs you have to decide for each with unknown effects on the other two.

**2.**

Question 2

The city revises its criteria to:

* "We **need** an algorithm that can let us know a bird is flying over Peacetopia as accurately as possible."
* "We *want* the trained model to take no more than 10 sec to classify a new image.”
* “We *want* the model to fit in 10MB of memory.”

Given models with different accuracies, runtimes, and memory sizes, how would you choose one?

Status: [object Object]

1 / 1 point

Expand

Correct

Yes. Once you meet the runtime and memory thresholds, accuracy should be maximized.

**3.**

Question 3

Based on the city’s requests, which of the following would you say is true?

Status: [object Object]

1 / 1 point

Expand

Correct

**4.**

Question 4

You propose a 95/2.5%/2.5% for train/dev/test splits to the City Council. They ask for your reasoning. Which of the following best justifies your proposal?

Status: [object Object]

0 / 1 point

Expand

Incorrect

No. There is not enough information to consider the satisficing metrics yet.

**5.**

Question 5

Now that you’ve set up your train/dev/test sets, the City Council comes across another 1,000,000 images from social media and offers them to you. These images are different from the distribution of images the City Council had originally given you, but you think it could help your algorithm. You should add the citizens’ data to the training set. True/False?

Status: [object Object]

1 / 1 point

Expand

Correct

Yes. This will cause the training and dev/test set distributions to become different, however as long as dev/test distributions are the same you are aiming at the same target.

**6.**

Question 6

One member of the City Council knows a little about machine learning and thinks you should add the 1,000,000 citizens’ data images to the dev set. You object because: (Choose all that apply)

Status: [object Object]

1 / 1 point

Expand

Correct

Great, you got all the right answers.

**7.**

Question 7

You train a system, and the train/dev set errors are 3.5% and 4.0% respectively. You decide to try regularization to close the train/dev accuracy gap. Do you agree?

Status: [object Object]

1 / 1 point

Expand

Correct

Yes. You need to know what the human performance level is to estimate avoidable bias.

**8.**

Question 8

You want to define what human-level performance is to the city council. Which of the following is the best answer?

Status: [object Object]

1 / 1 point

Expand

Correct

Yes. The best human performance is closest to Bayes' error.

**9.**

Question 9

A learning algorithm’s performance can be better than human-level performance but it can never be better than Bayes error. True/False?

Status: [object Object]

1 / 1 point

Expand

Correct

Yes. By definition, human level error is worse than Bayes error.

**10.**

Question 10

You find that a team of ornithologists debating and discussing an image gets an even better 0.1% performance, so you define that as “human-level performance.” After working further on your algorithm, you end up with the following:

|  |  |
| --- | --- |
| Human-level performance | 0.1% |
| Training set error | 2.0% |
| Dev set error | 2.1% |

Based on the evidence you have, which two of the following four options seem the most promising to try? (Check two options.)

Status: [object Object]

1 / 1 point

Expand

Correct

Great, you got all the right answers.

**11.**

Question 11

You also evaluate your model on the test set, and find the following:

|  |  |
| --- | --- |
| Human-level performance | 0.1% |
| Training set error | 2.0% |
| Dev set error | 2.1% |
| Test set error | 7.0% |

What does this mean? (Check the two best options.)

Status: [object Object]

1 / 1 point

Expand

Correct

Great, you got all the right answers.

**12.**

Question 12

After working on this project for a year, you finally achieve: Human-level performance, 0.10%, Training set error, 0.05%, Dev set error, 0.05%. Which of the following are true? (Check all that apply.)

Status: [object Object]

1 / 1 point

Expand

Correct

Great, you got all the right answers.

**13.**

Question 13

Your system is now very accurate but has a higher false negative rate than the City Council of Peacetopia would like. What is your best next step?

Status: [object Object]

1 / 1 point

Expand

Correct

Yes. The target has shifted so an updated metric is required.

**14.**

Question 14

You’ve handily beaten your competitor, and your system is now deployed in Peacetopia and is protecting the citizens from birds! But over the last few months, a new species of bird has been slowly migrating into the area, so the performance of your system slowly degrades because your model is being tested on a new type of data. There are only 1,000 images of the new species. The city expects a better system from you within the next 3 months. Which of these should you do first?

Status: [object Object]

1 / 1 point

Expand

Correct

Yes. A sufficient number of images is necessary to account for the new species.

**15.**

Question 15

The City Council thinks that having more cats in the city would help scare off birds. They are so happy with your work on the Bird detector that they also hire you to build a Cat detector. You have a huge dataset of 100,000,000 cat images. Training on this data takes about two weeks. Which of the statements do you agree with? (Check all that agree.)

Status: [object Object]

0 / 1 point

Expand

Incorrect

You didn't select all the correct answers