Your grade: 100%

Your latest: 100% • Your highest: 100% • To pass you need at least 80%. We keep your highest score.

Next item

1. How are climate change and biodiversity related? Select all that apply. 1 / 1 point

- [x] Climate change contributes to the loss of habitats for different animals and plants, which can lead to extinction of these species.

  Correct
  Unfortunately, that's right. There are already a number of species which had to move due to habitat loss or have even become completely extinct due to global warming.

- [ ] Global warming is the primary reason for the disappearance of important ecosystems.
- [x] Biodiversity loss undermines nature's ability to cope with climate change.

  Correct
  That's right! In many cases the disappearance of species, plants in particular, like coastal mangrove forests, can reduce nature's ability to withstand extreme weather and coastal erosion.

- [x] Protecting and preserving biodiversity through protection and restoration of natural ecosystems can help in the mitigation of and adaptation to climate change.

  Correct
  Yes! Protecting and restoring forests are our best current methods for removing carbon from the atmosphere and healthy natural ecosystems like wetlands and coastal ecosystems can help reduce the impacts of extreme weather events and other impacts of climate change.

2. What are some of the drivers of the so-called "sixth mass extinction"? Select all that apply. 1 / 1 point

- [x] Land development

  Correct
  Yes.

- [x] Climate change.

  Correct
  Top work.

- [x] Hunting and fishing.

  Correct
  Great.

- [x] Pollution of the environment.

  Correct
  Good job.

3. Which of the following types of data are used in biodiversity monitoring with AI? Select all that apply. 1 / 1 point

- [x] Camera trap data.

  Correct
  Yes! Camera traps can be used to take images of animals in an ecosystem with minimal disturbance.

- [x] Audio recordings.

  Correct
  That's right! This type of data comes from acoustic sensors (microphones) placed in the forests, underwater or in any other habitat to monitor the sounds of an ecosystem.

- [x] Satellite imagery.

  Correct
  Great!, Satellite imaging can be used to track rates of deforestation or coral bleaching events, among other things.

4. True or false: A United Nations study concluded that with just 2 degrees celsius of global warming, 99 percent of coral reefs would die off. 1 / 1 point

- (•) True.
- ( ) False.

  Correct
  Yes, unfortunately this was their conclusion.

5. How can AI be used to help in biodiversity monitoring? Select all that apply. 1 / 1 point

- [x] AI can be used to process audio recordings and detect the presence of animals based on their characteristic sounds.

  Correct
  Yes, and this is known as bioacoustic monitoring.

- [x] AI can be used to detect and classify animals in camera trap images.

  Correct
  That's right, and this is what you're doing in the labs in this course!

- [x] AI can be used to monitor deforestation through automatic interpretation of satellite imagery.

  Correct
  Yes, and this is a little different than animal classification. In this case each pixel of an images might be classified as forest or something else.

- [ ] AI can be used to create a wind power forecast in order to generate renewable energy more efficiently.

6. Which of the following statements are true about the use of camera trap data for biodiversity monitoring? Select all that apply. 1 / 1 point

- [x] Camera traps use motion sensors to trigger a camera to take pictures of anything that comes by.

  Correct
  That's right!

- [x] Beyond animals, camera traps are also likely to record pictures of people and vehicles, which need to be treated as personal private information.

  Correct
  That's right, whenever recording images or video or audio in public or private spaces it's important to be able to identify and remove recordings of people from your dataset.

- [x] Camera traps may record thousands or even millions of images, which would be difficult or impossible for an individual or a small team to analyze manually.

  Correct
  True. This is where citizen science and AI can help, by crowdsourcing image labels and building automatic image analysis pipelines.

7. Why is it that we seem to know much more about trends in biodiversity of mammals and other relatively large species than we do for microbes? 1 / 1 point

- [x] Large animals are relatively easy to count, track, listen for, or take pictures of, while microbe populations may require special techniques to study in detail.

  Correct
  That's right, at least one reason we know more about large animals is that they're easier to study than microbes in many cases.

- [x] Large animals (a.k.a. "charismatic megafauna") tend to capture peoples' attention more readily than microbes when it comes to issues of biodiversity loss and the destruction of natural ecosystems.

  Correct
  Indeed, charismatic megafauna are exciting to study and somehow more relatable than microbes, making them attractive to study.

- [ ] Microbes are less important than large animals to the health of ecosystems and therefore are less important to study.

8. Which of the following are true about an imbalanced dataset? Select all that apply. 1 / 1 point

- [x] If you have an imbalanced dataset, collecting more examples for underrepresented classes can help.

  Correct
  Great job. If collecting more data on certain classes is possible, it may help your model perform better.

- [x] When you are working on an image classification problem and you have many images of some classes, but only a few images for other classes you can say you have imbalanced data.

  Correct
  That's right!

- [ ] Imbalanced data is not a problem, as the neural network anyway does not distinguish between the classes, before it is trained.

9. What are some of the issues you identified in the dataset in the data exploration lab for the Snapshot Karoo project? Select all that apply. 1 / 1 point

- [x] The dataset is highly imbalanced (there are many images of some animals and very few images of other animals).

  Correct
  That's right! With an imbalanced dataset you may have issues training your neural network.

- [x] Some animals may appear very close or very far from the camera, making them difficult to recognize.

  Correct
  That's right! If you, or an expert have difficulties recognizing an animal, it may turn out that the neural network will have a similar problem.

- [x] The images are taken and labeled in sequences, thus some images in the sequence may not contain the animal at all.

  Correct
  That's right! The whole sequence is labeled the same, even if the animal walks out of the field of view during the sequence.

10. True or False: For your dataset in the Snapshot Karoo project, a naive model that simply predicted "Gemsbok / Oryx" for every example would be correct more than 25% of the time. 1 / 1 point

- (•) True.
- ( ) False.

  Correct
  That's right! This is one of the challenges with training a model based on an imbalanced dataset, namely, that your model will optimize for accuracy and if it's easier to simply make a random guess of the dominant class than it is to actually learn how to recognize your object of interest then your model may fail to learn!