Challenge Tutorial Template

Use this template to design and develop the tutorial of the challenge through a Game-Based Learning (GBL) approach.

Name	Are you a dog? Then come in!
Tool	https://machinelearningforkids.co.uk/#!/projects https://cognimate.me:2635/home
Aim	The aim of the game is to experiment with Machine Learning (ML) and being introduced to the concept of AI Bias.
Description	A scientist asked you to help design an automated pet door that should only let in dogs. You will do this by building a Machine Learning algorithm, using pictures from the internet. Test your Machine Learning algorithm to see if any type of dog will be recognized (and allowed inside) or if any intruders (cats, wolfs, foxes, etc.) can sneak in as well.
Step-by-step	Help us build a classifier for an automated pet door that will only allow dogs inside the house: **First, you will start making your Machine Learning algorithm.** 1. Go to https://machinelearningforkids.co.uk/#!/welcome 2. Click on "Get Started" 3. Click on "Try it now" 4. Click on "Add a new project" 5. Give your project the name 'pet door' 6. Click on 'Recognising' and choose "images" 7. Click on Create 8. Click on your project 9. Click on Train

10. Create a label by clicking on "add new label", name the label 'dogs', and click on add
11. Create another label by clicking on "add new label", name the label "others", and click on add.

Now you will train your Machine Learning algorithm with pictures of dogs

12. Open a new web browser and go to www.google.com
13. Search for a picture of a dog
- Type dogs in the search balk of google and press enter
- Click on 'images'
14. Right mouse click on a picture of a dog that you like
15. Click on "copy image address"
16. Go to your Machine Learning Algorithm Project
17. Click on 'www' under 'dogs'
18. Click on 'Enter the URL...' and then right mouse click, and click on 'paste', and then click on 'add'

You have now uploaded a picture. Do this again, until you have 10 pictures of dogs. WARNING: sometimes a picture cannot be add, you will see a red cross. Then search for another picture.

Now train your Machine Learning algorithm with pictures of other animals, following the same steps as above:

19. Open a new web browser and go to www.google.com

20. Search for a picture of a animal

- Type animal in the search balk of google and press enter
- Click on 'images'
21. Right mouse click on a picture of a an animal (but not a dog!) that you like
22. Click on "copy image address"
23. Go to your Machine Learning Algorithm Project

24. Click on 'www' under 'Others'
25. Click on 'Enter the URL…' and then right mouse click, and click on 'paste', and then click on 'add'

You have now uploaded a picture. Do this again, until you have 10 pictures of other animals than dogs.

WARNING: sometimes a picture cannot be add, you will see a red cross. Then search for another picture.

Now you will give your Machine Learning algorithm the chance to learn:
26. Click on '*back to project*', click on '*Learn & Test*', and then on 'Train new Machine Learning model'

Now you are going to test your Machine Learning algorithm and see if it can recognizes a dog from other animals.

27. Go to www.google.com again and search again for a picture of a dog just like you did before.
28. Copy again the image address by making a right mouse click and choose 'Copy image address'
29. Paste it in the bar 'test with a web address …'
30. Click on 'test with www'
31. Now you will read below the bar:
    Recognised as dogs OR Recognised as others.
Was your Machine Learning algorithm right?

Repeat the above and see if your algorithm can recognize other dog breeds as well (Brussels Griffon, Irish Wolfhound, Catalburun, Xoloitzcuintli, Bull Terrier)

Now see if your Machine Learning algorithm can recognize animals that are not dogs.
32. Go to www.google.com again and search again for a picture of an animal that is not a dog

33. Copy again the image address by making a right mouse click and choose 'Copy image address'

34. Paste it in the bar 'test with a web address …'

35. Click on 'test with www'

36. Now you will read below the bar: ***Recognised as dogs OR Recognised as others.***

Was your Machine Learning Alogirthm right? Repeat the above stops for other animals like a cat, fox, wolf, raccoon, etc.

Answer the following questions:

- Was your Machine Learning algorithm always right? If not, why not?
- How could you improve your Machine Learning Algorithm?
- What are the dangers of using your Machine Learning algorithm for a pet door? (Can dogs come in? Can other animals stay out?)
- How would you feel if your dog would have to sleep in the cold, because your pet door didn't recognize your dog?

Other challenges
Try building a Machine Learning Algorithm that can recognize both dogs and cats (tip: make a label for dogs, a label for cats, and a label for others)

Try building a Machine Learning Algorithm that can recognize your face and all other faces of your classmates. (tip: make a label for your face, and a label for other faces)

Try building a Machine Learning Algorithm that can recognize all different kinds of fruit (tip: make a lot of labels for each individual fruit: apple, pear, strawberry, etc.)

Try building a Machine Learning Algorithm that is never wrong (tip: train the algorithm with A LOT OF pictures).