AI Coding
Day 5

Intelligent Mini Application Design

CodeKids Canterbury

Todays Plan

1. Finish our voice transcriber (10-10:45am)
2. Pokemon Type Guesser (10:45-11:10am)
3. The Wise Owl (11:10-12pm)
4. Choose your own mini application (Worksheets provided) (1pm-3pm)

Project 1: Pokemon Images

Pokemon Basics

This is Pikachu.

Pikachu is an **electric** Pokémon.

There are lots of different types of Pokémon.

Jigglypuff is a **fairy** Pokémon.

Check the types of other Pokémon in the Pokémon database at https://pokemondb.net

The types of Pokémon are:

- Normal
- Grass
- Ground
- Rock
- Fire
- Ice
- Flying
- Ghost
- Steel
- Water
- Fighting
- Psychic
- Dragon
- Fairy
- Electric
- Poison
- Bug
- Dark

Squirtle

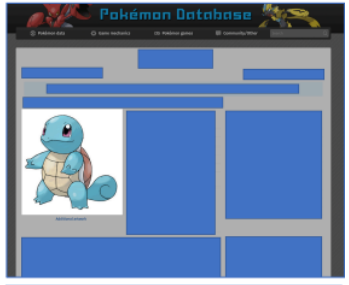
What type of Pokémon is Squirtle?

What information do you think you could use to guess the type?

Would you use the way that it looks? Do you think the colours and the shapes would give you a good clue for what the type is?

Would you use the statistics that describe the Pokémon's size, abilities, and fighting style?

Do you think those numbers would give you a good clue for what the type is?



No one way is perfect

There aren’t rules. But we can learn what they have in common and use this to make a guess.

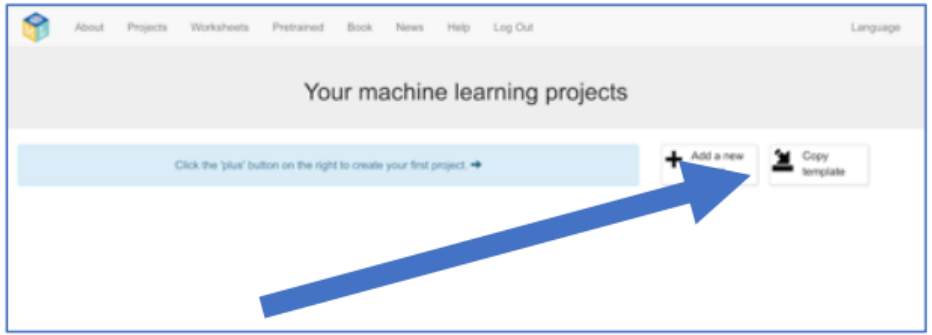
Computers can do this. Computers can work without relying on rules, by learning what things have in common and using this to make predictions.
We call this type of computing **Machine Learning**.

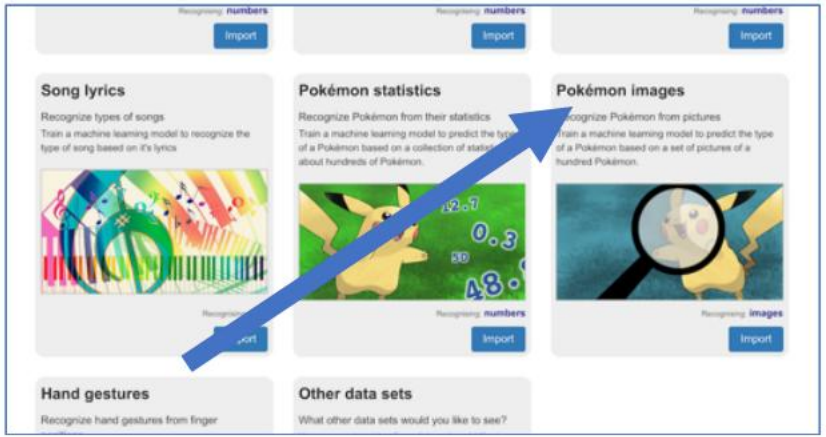
In this project, you will train a computer to be able to predict the type of a Pokémon based on how it looks, by training it with pictures of a hundred example Pokémon.

To make things a little quicker, we won’t train the computer to recognise every type of Pokémon, we’ll just focus on six of the types as an example.

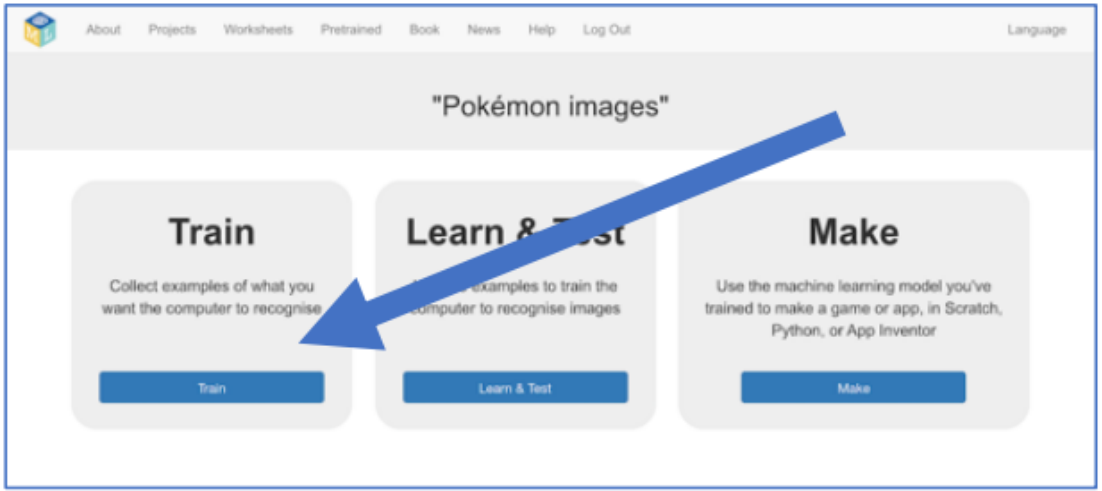
Get Started

1. Go to https://machinelearningforkids.co.uk/ in a web browser
2. Click on “Get started”
3. Click on “Try it now”
4. Click on “Copy template”
5. Click on **“STORE ON YOUR COMPUTER”**





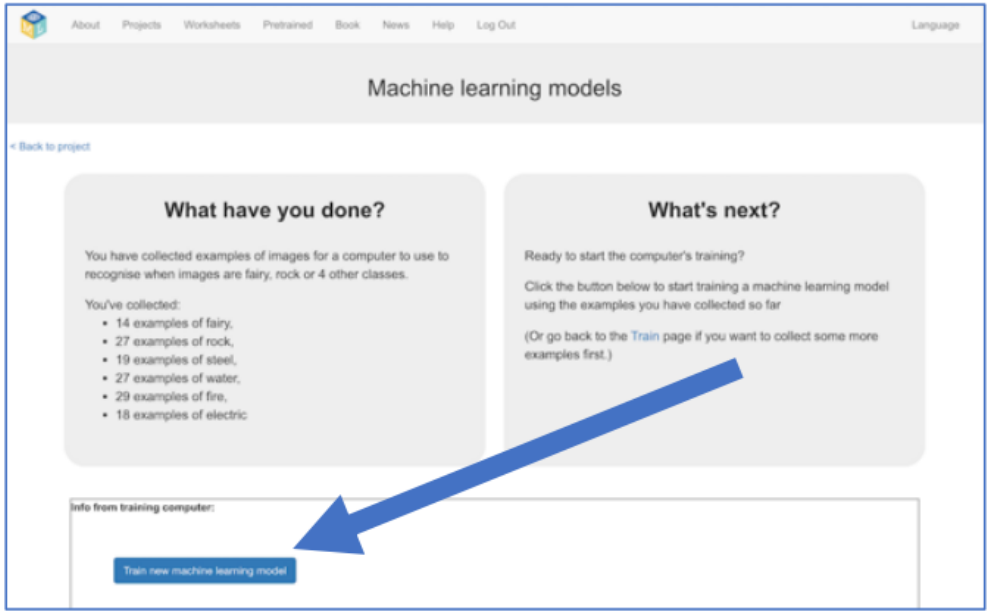
Training Template



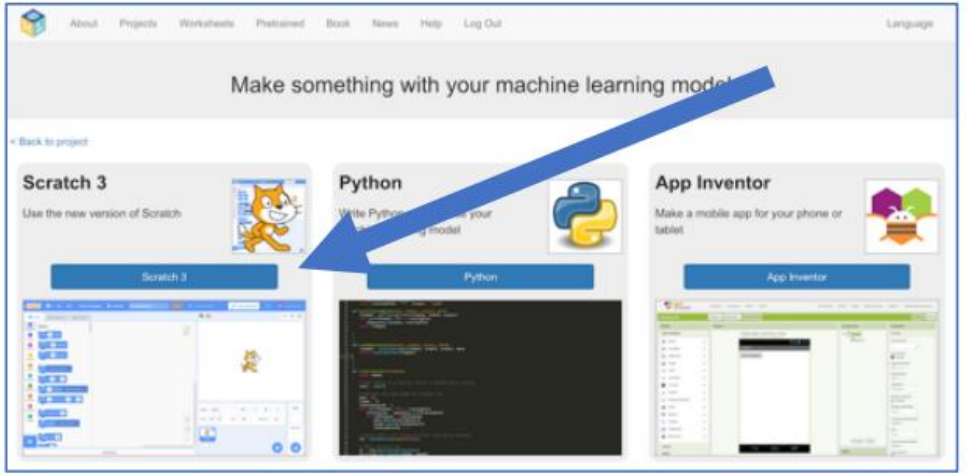
Look through the training images These are the images of over a hundred Pokémon that you will use to train the computer with

Training The Model

1. Click on “Back to project”
2. Click on “Learn & Test”
3. Click on “Train new machine learning model”

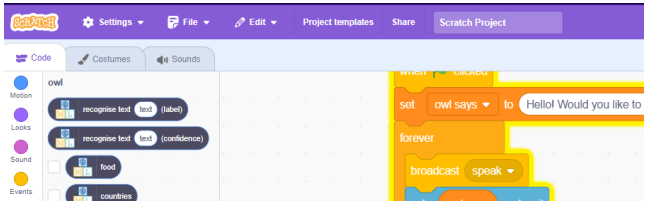


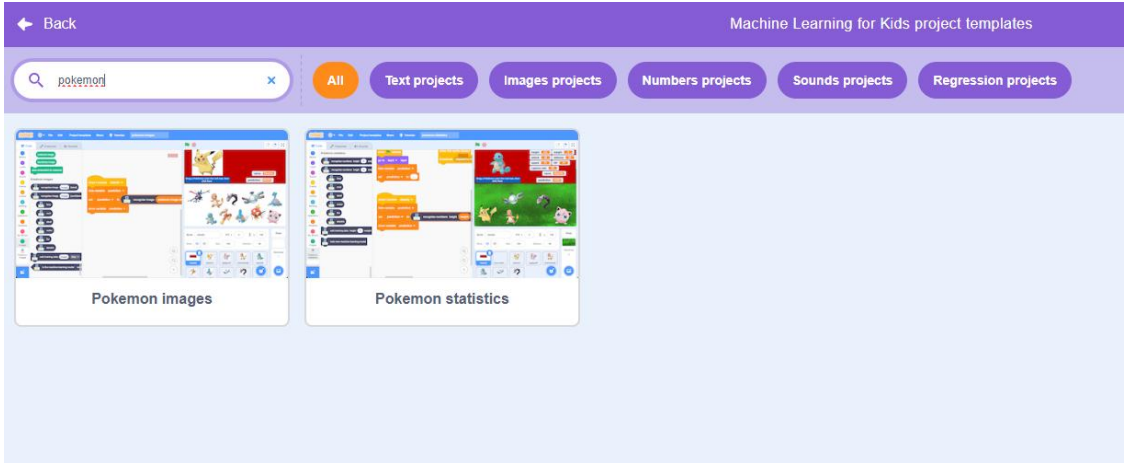
Open in Scratch



Find Pokemon Images in Templates

Click on “Project templates”
Click on “Pokemon images”





Add Code

Select classify sprite

Find the “when I receive classify” code

Update the code to use your machine learning model

Test Using https://pokemondb.net/ Images

Images of six Pokémon have been prepared for you in the Scratch project. All six of these are Pokémon that were not included in the training data you used to train your machine learning model.

If you want to test with more Pokémon, you can find more images at https://pokemondb.net

Try testing your model to see what mistakes it makes.

If you find a mistake, look at your training examples again to try and think of a reason for the mistake. Different models will behave differently, so your results may not be the same as mine. But here are mistakes I noticed in my testing.

Project 2: Wise Owl: Game Support Chat Bot

Decide on a game for your chat bot

It must be a **niche** within the game, as we can't teach it everything due to time constraints

• For example:

•**Minecraft Creeper FAQ** (e.g what are they scared of? When do they spawn)

•**Roblox specific game e.g 'steal a brain rot' or 'house td'** (What happens when you steal someone's brain rot but get killed?)

•**Finnleys Ant Game** (I don't know any examples for this, but Finnley plays it all day)

•**Clash of Clans Town Hall FAQ** (What does a level 5 town hall get me?)

•Etc etc

For my example, I am going to **not pick** a game as I don't want you to copy me! I'll do a quiz on owls.

Decide on 5 questions somebody may ask about your game

- What do owls eat?
- Where in the world do owls live?
- How long do owls live?
- What types of owls are there?
- How big do owls grow?

Give your questions labels

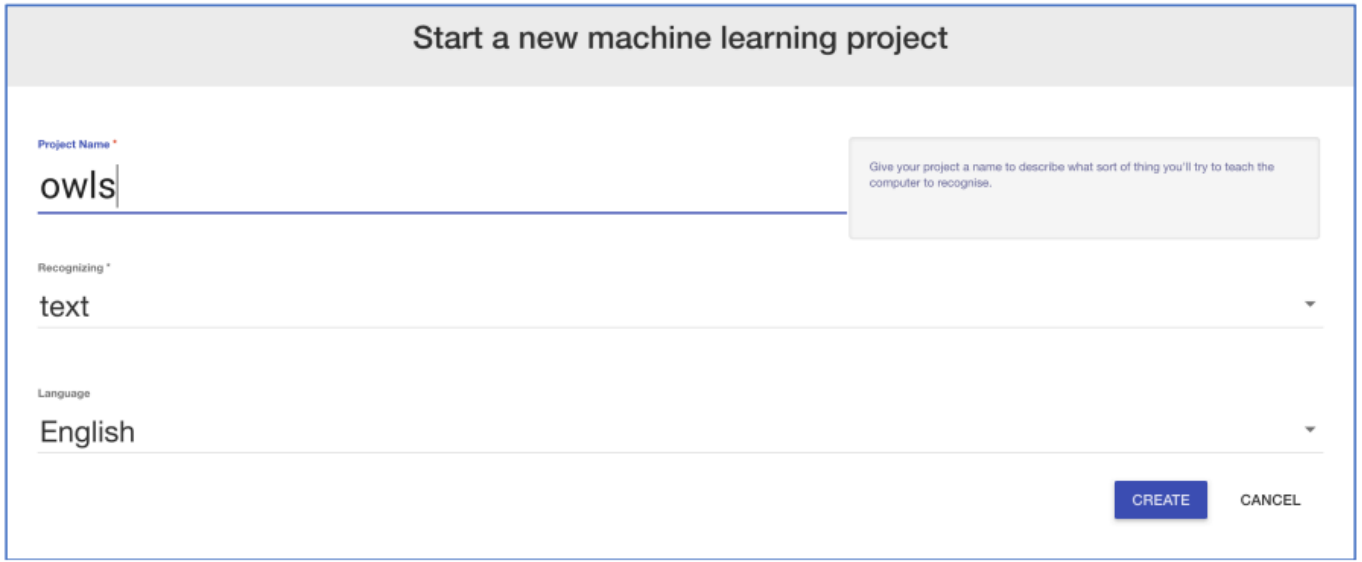
- What do owls eat? **-> food**
- Where in the world do owls live? **-> countries**
- How long do owls live? **-> lifespan**
- What types of owls are there? **-> species**
- How big do owls grow? **-> size**

Getting setup

- Go to https://machinelearningforkids.co.uk/ in a web browser
- Click on “Get started”
- Click on “Try it now” 6.
- Click on “Projects” on the top menu bar
- Click the “+ Add a new project” button.

Create a text based project

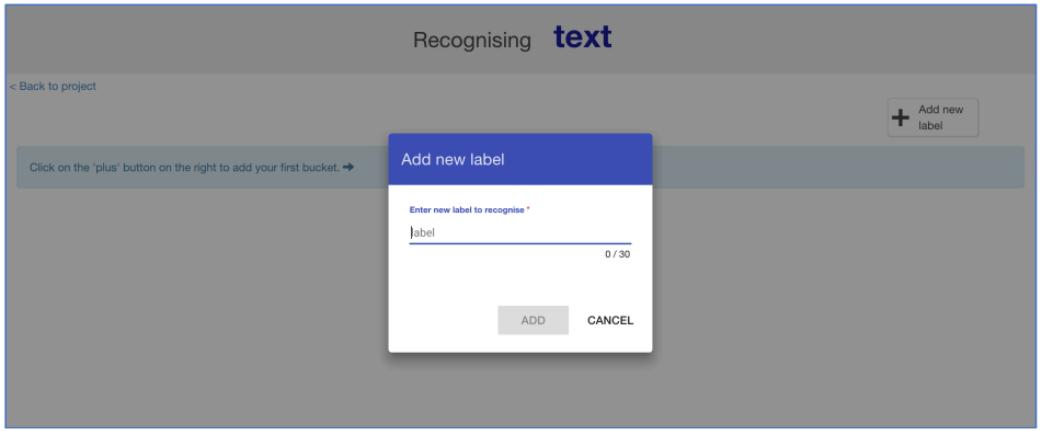
Create a project and set it to learn how to recognise ‘text’ and click the ‘create’ button



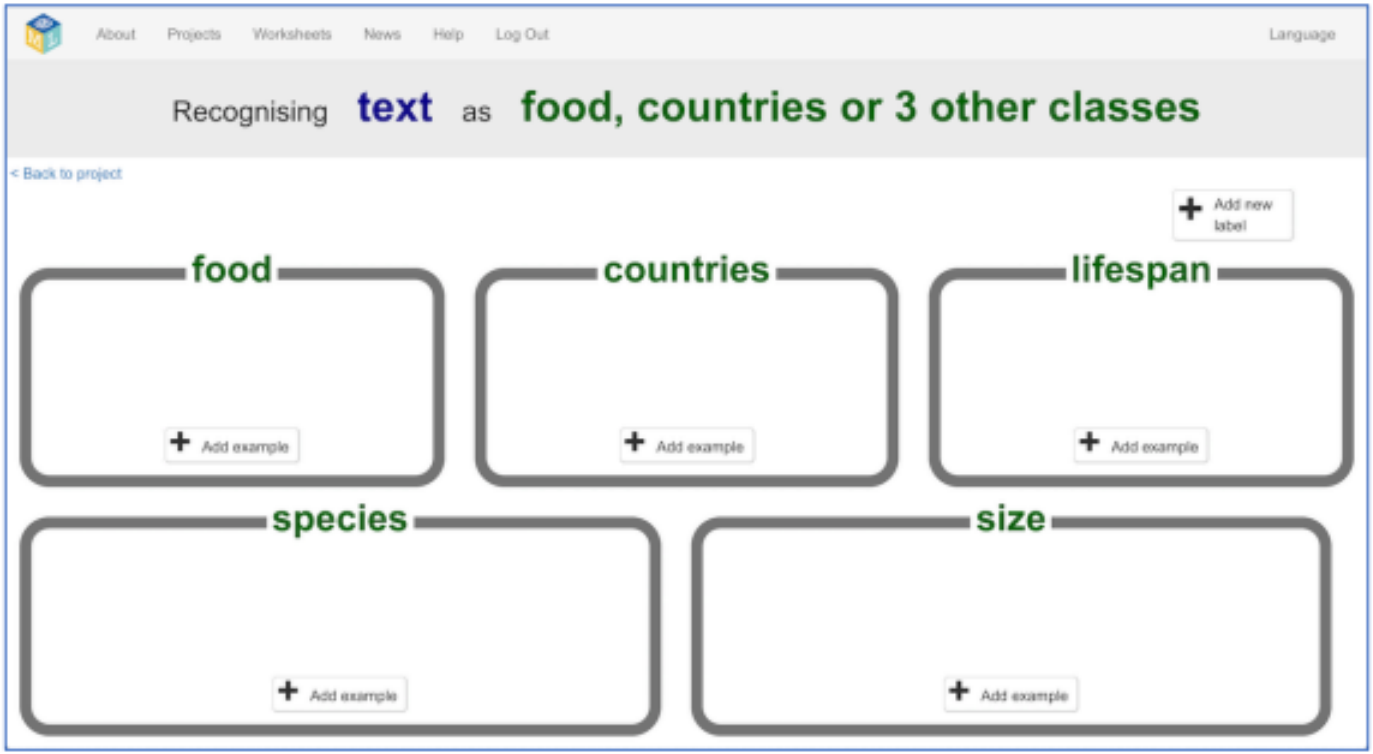
Open Training Screen, Add new label

1)

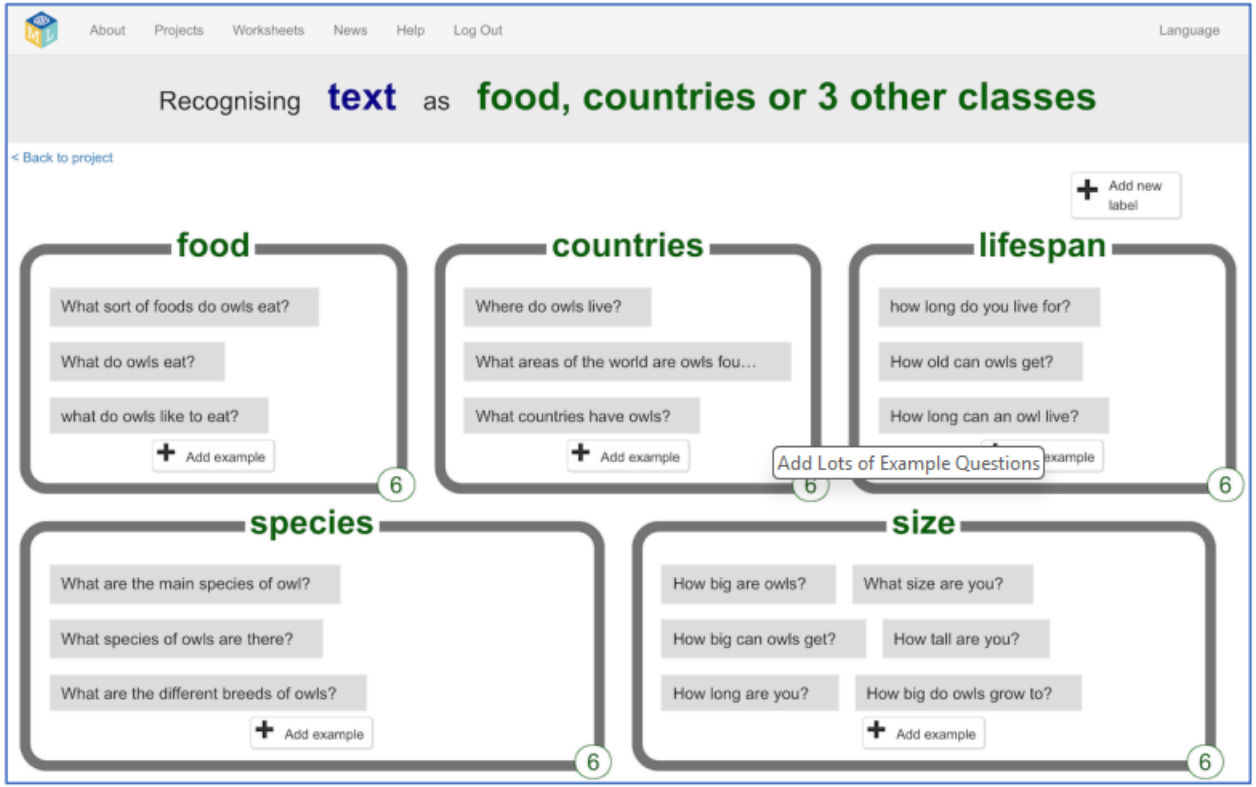
2)



Add Labels For Your Categories



Add Lots of Example Questions

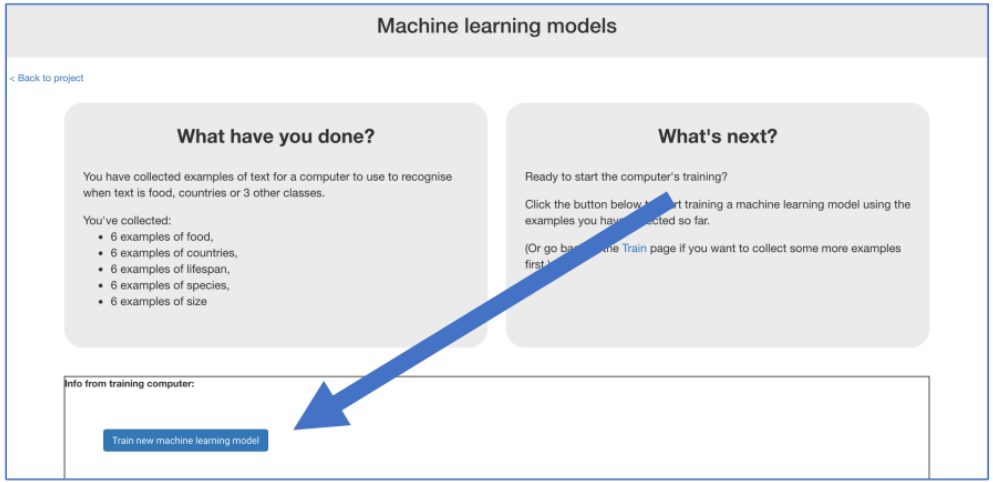


Each label only has **one answer.**

Training The Model

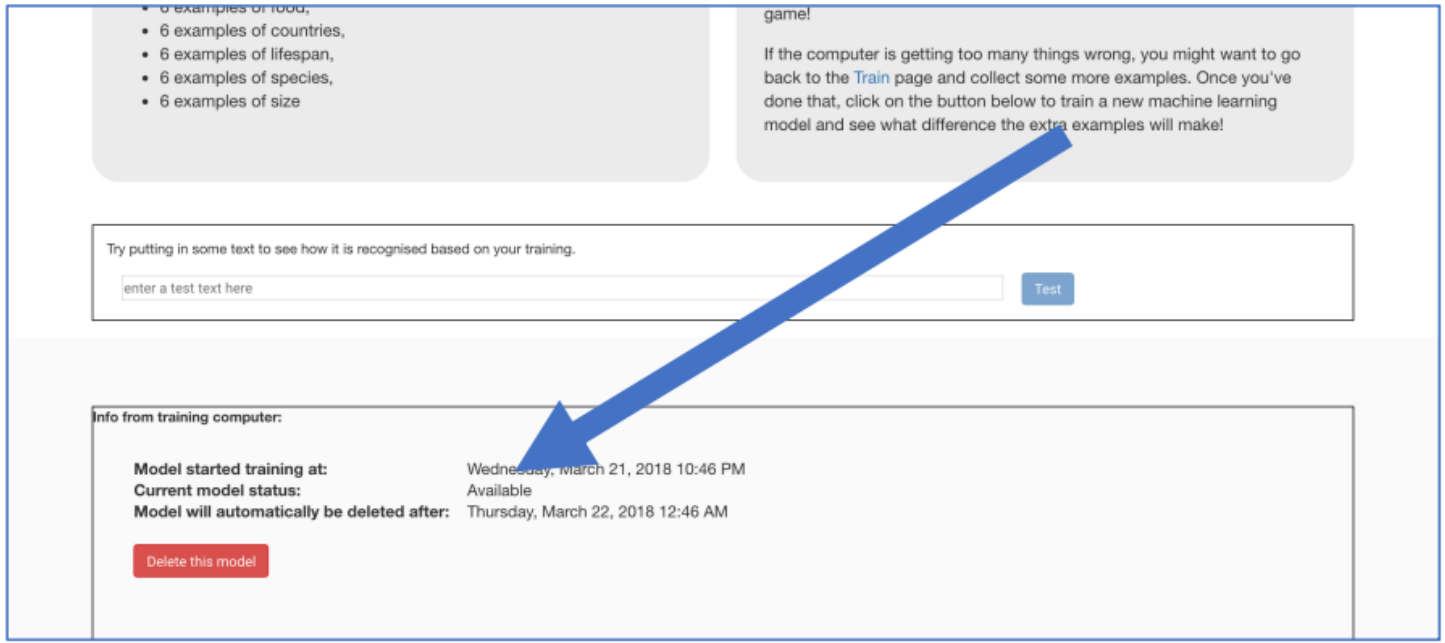
Click on the “< Back to project” link
Click the “Learn & Test” button

Click the “Train new machine learning model” button
As long as you’ve collected enough examples, the computer should start to learn how to recognise questions from the examples you’ve given to it.

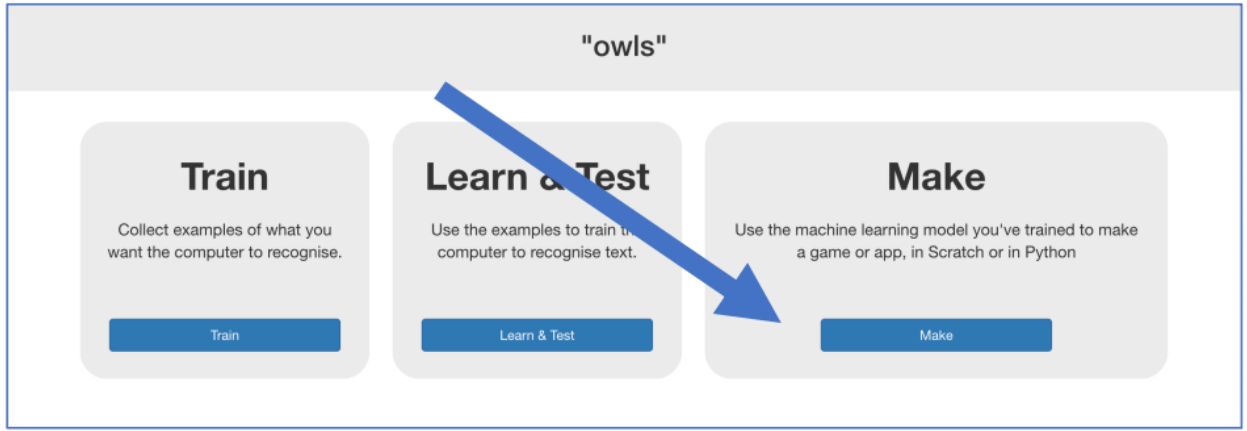


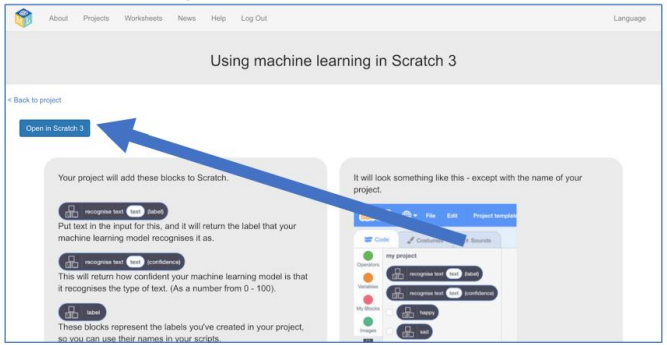
Wait For Training to Complete 😴

This might take a couple of minutes. It's finished once you see the "status" change to "Available"



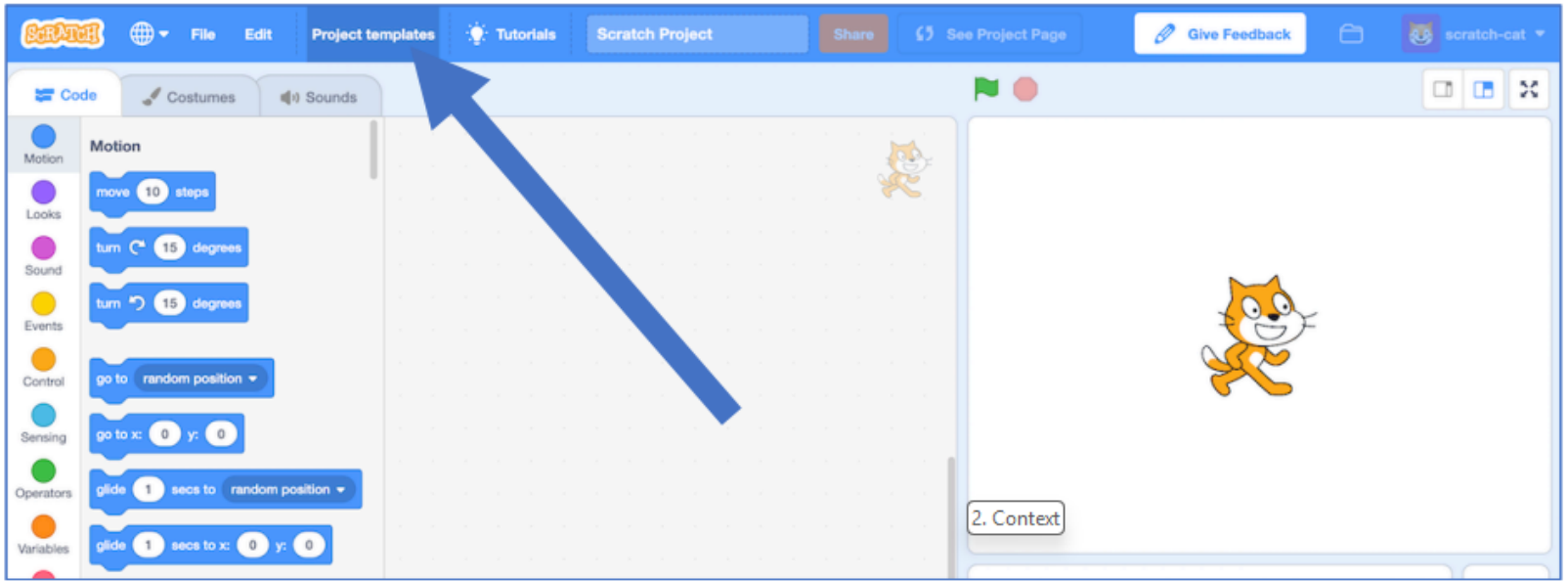
Import to Scratch



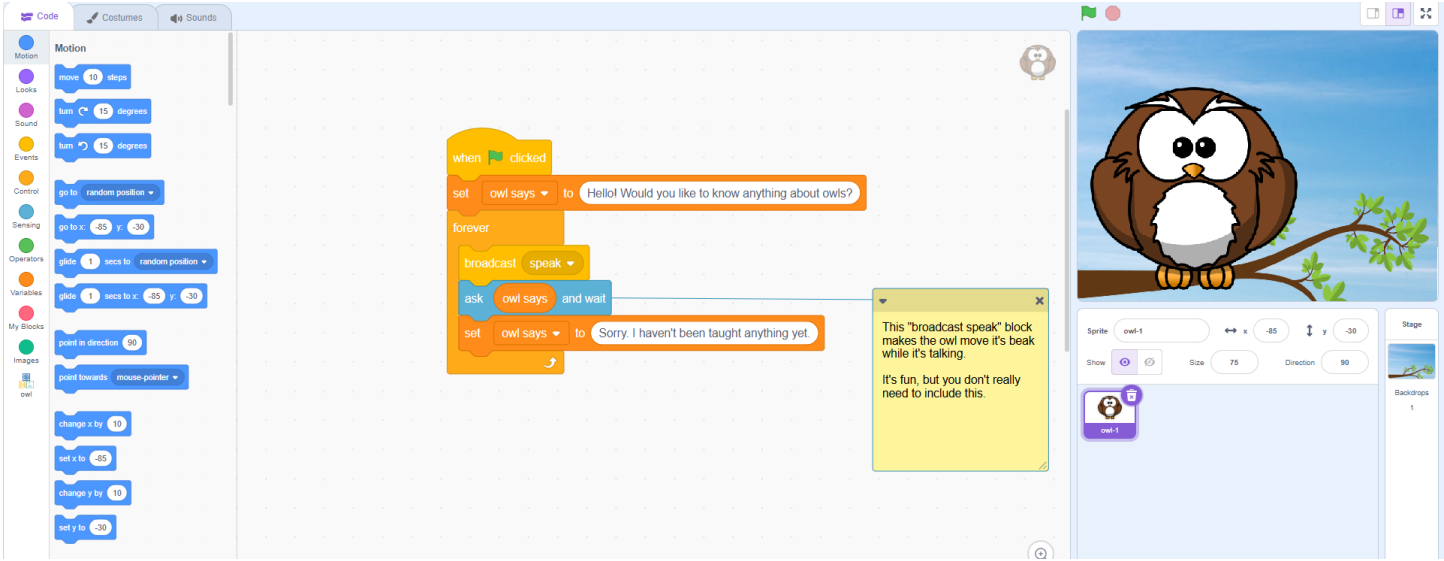


Open ‘Owls’ Template

Open Owls Templates from this tab

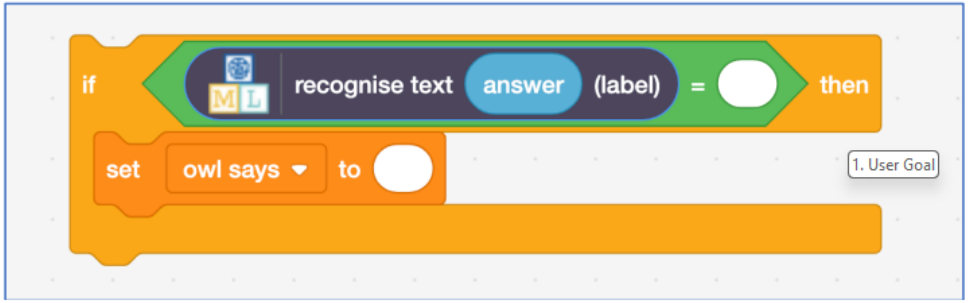


What you should see:

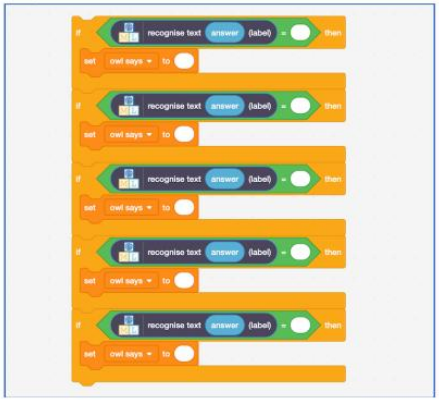


New Code

Create this little snippet of script but don’t attach it to anything yet Make sure you choose “owl says” for the orange block.

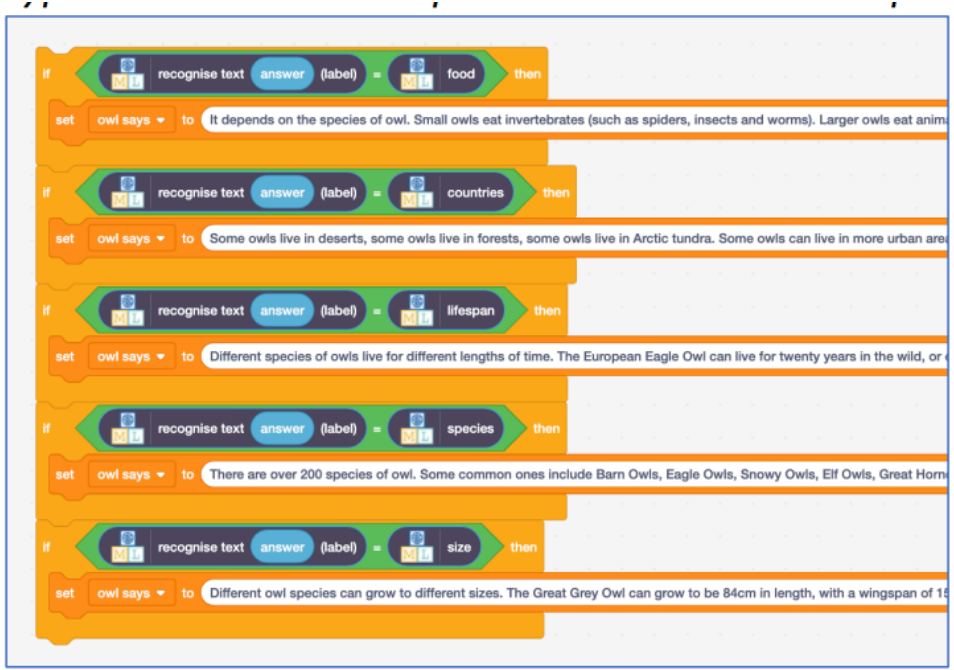


Duplicate it four times and join them all together
Right-click on it, and click “Duplicate”



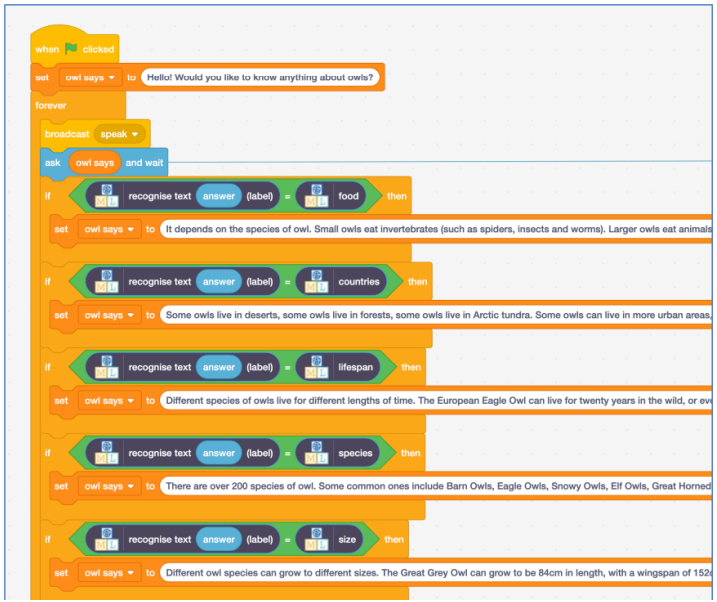
Answers

Fill in each copy of the block Drag the label for one of your questions into the top space, and Type the answer to the question into the bottom space



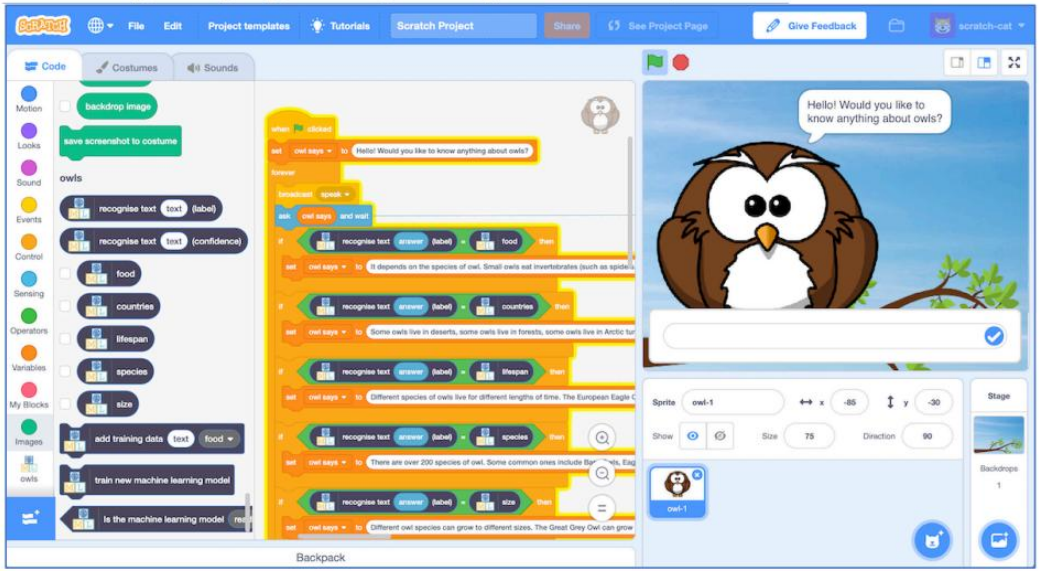
Combining

Drag this new block into the Green Flag block prepared for you. Remove the “Sorry. I haven't been taught anything yet.” block and replace it with your new chunk of script



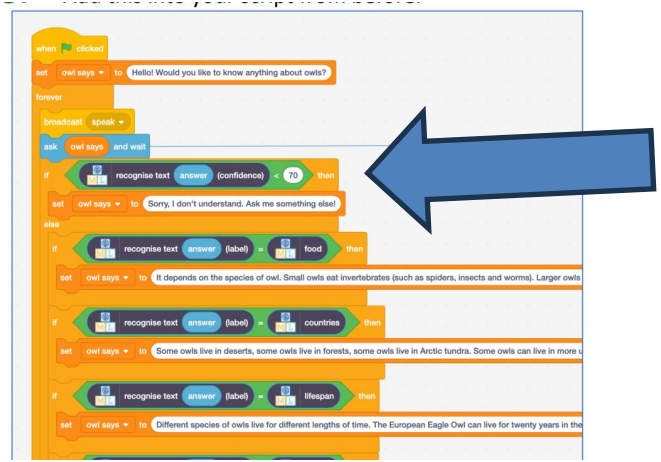
Test

Click the green flag and try asking the owl a question



Extension Tasks

1) If the owl is not confident in its answer, then add a redundancy.



2) Change the owl to a character from your video game