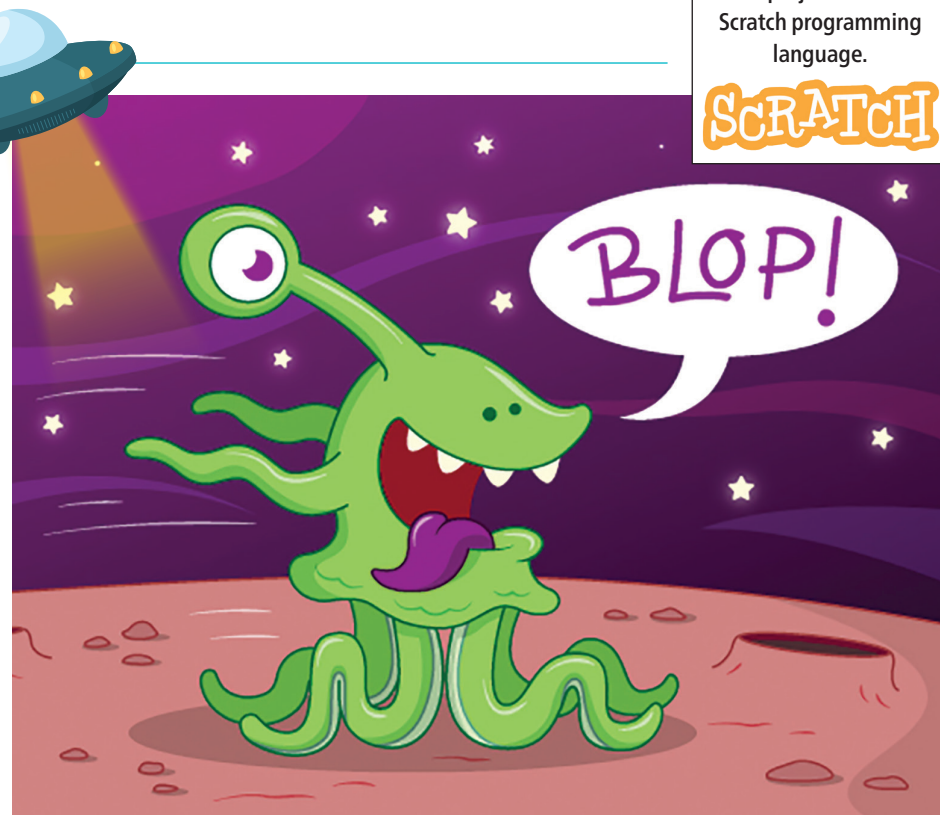# CODING CLUB

A place to code and create

The coding club is your place to learn and develop coding skills. We've created these pages with the Raspberry Pi Foundation to provide loads of projects, from building games to designing animations.

This project uses the Scratch programming language.

SCRATCH

BLOP!

Create your own alien language

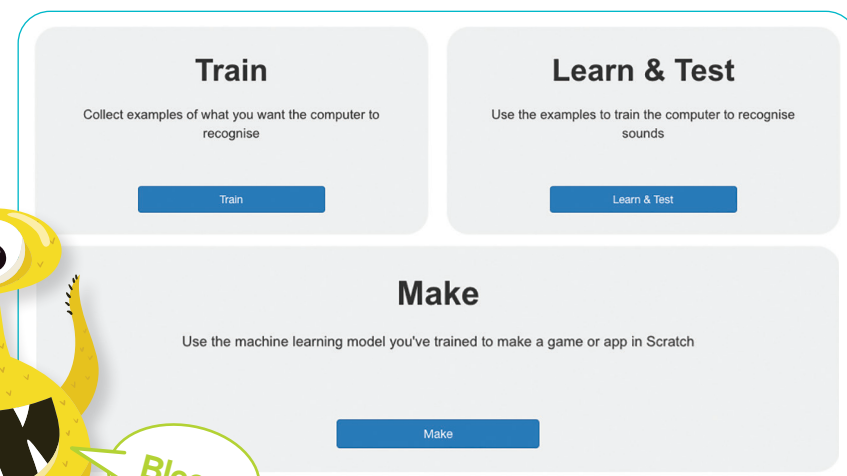Use machine learning to train a computer and control an alien creature.

Record your alien words

1 First, go to machinelearningforkids.co.uk Here, you will train a computer to recognise different sounds.

2 Click on Get started, then select Try it now button to start a project without registering.

3 Select Projects on the navbar at the top of the page, then click on the Add a new project button.

4 Name your project "Alien language". Under Project Type choose "recognising sounds" from the drop-down menu, and Storage to store data in your web browser. Click CREATE.

5 Select your project and click the Train button. To be able to train your machine learning model you need to allow access to your microphone – only allow access when visiting the website.

6 First, record some samples of background noise. Click the microphone symbol to collect a sample of background noise (don't say anything). Click the Add button to save each recording. Do this eight times.

7 Now it is time for you to invent some alien words. Make up one that means "left" and one that means "right" (we started with "bleep" and "blop"). Click Add a new label and name it "left". Record eight examples of your new word.

8 Repeat the process to capture eight recordings of your alien word that means "right".

Train your model

1 It is now time to train your machine learning model. Go back to the project page (the left pointing arrow at top left) and click on Learn & Test.

2 Click the button labelled Train new machine learning model. This may take a few minutes to complete.

3 Once completed, test your machine learning model to see how accurate it is at recognising what you're saying . Click the Start listening button and say your alien words. The computer will tell you what it recognises and how confident it is in that prediction. If the model is mostly getting it correct, go to Scratch and start building your game. If not, go back to the Train page and collect some more examples.

4 Once you're happy with the results, click the Make button on your project page. Click through the options to open your model in Scratch 3.
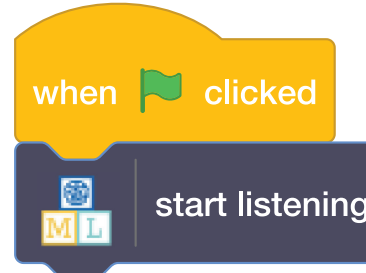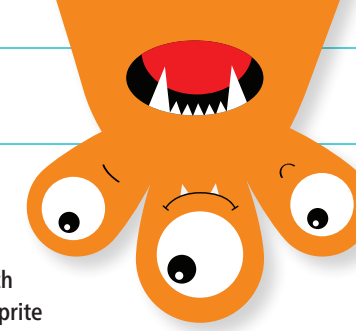
Train	Learn & Test
Collect examples of what you want the computer to recognise	Use the examples to train the computer to recognise sounds
Train	Learn & Test

Make

Use the machine learning model you've trained to make a game or app in Scratch

Make

Bleep!

ALIEN SPEAK

Control your alien

Alien sprite

1 Click on Project templates on the navbar, and search and select the "Alien language" project. The alien sprite already has some coding blocks on it.

2 Select the Alien sprite, click on the Code tab and add the three scripts (right). A script is a stack of coding blocks that makes a list of instructions. Be careful not to delete the script that is already there.

3 Click the green flag and say your alien words for "left" and "right". Check that the alien "understands" your instructions and moves the way you expected.

when 🏴 clicked

M L start listening

M L when I hear left
say left
walk left

M L when I hear right
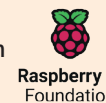say right
walk right

Take it further

Once you're happy with your alien, you could go back to the machine learning model and train your alien to recognise new alien words. Why not make up words for "up" and "down". Just remember to record eight samples of each word and then train your model to recognise those sounds. After you've finished, you will need repeat the last stage, adding the scripts above as well as new scripts that tell your alien how to move when it recognises the words for "up" and "down".

Zomp! Hiffpock!

REX SHUTTERSTOCK

The Raspberry Pi Foundation is a UK-based charity with the mission to enable young people to realise their full potential through the power of computing and digital technologies. Discover more step-by-step coding projects at rpf.io/scienceandnature

Raspberry Pi Foundation