Raspberry Pi Foundation

Classifying ocean data

Stage 1: Defining the problem

Train a machine learning model that will predict the location of each float that has failed to send back its location data. Introduction video - [rpf.io/xai-5-v3](rpf.io/xai-5-v3)

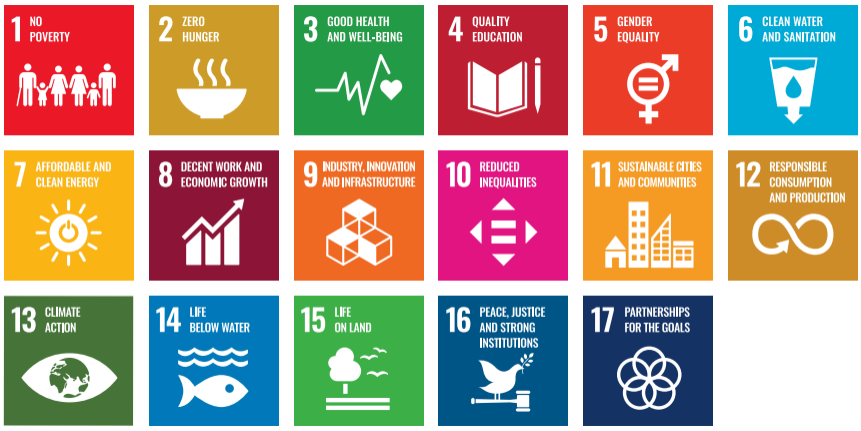

Image source: https://www.un.org/sustainabledevelopment/news/communications-material

Use the table below to identify between one and four UN Sustainable Development Goals that you think this project will support, and justify your answers.

UN Sustainable Development Goal	Justification

The use of machine learning

Describe in two or three sentences why creating a machine learning classification model is a suitable approach to solving this problem (your answer should describe why a data-driven, rather than rule-based, approach is needed).

Stage 2: Preparing the data

The data has been collected and cleaned for you. Below is a list of the features in the data:

Temperature, Salinity, Region

You will be creating a classification model. Use the space below to plan what classes you will need.

Classes		

Now you are ready for stage 3: training the model.

Stage 4: Testing the model

What should be the **threshold** confidence score for your model? Give your answer as a percentage.

Use the data you have set aside to test your model. As you are doing this, keep a note of how many tests you have done and in how many of them the data was labelled correctly.

You can use this formula to work out accuracy:

$$\text{Accuracy} = \frac{\text{Number of correct predictions where threshold is met}}{\text{Total number of predictions}}$$

Multiply this number by 100 to express the accuracy of your model as a percentage.

Complete a minimum of 10 tests on your model and write down the accuracy below:

Accuracy =

Reflection

If your model does not have an accuracy of 100%, why do you think that is?

What could you do to improve your model (if 100% accuracy was not achieved)?

Explorer task

Return to your model and see if you can improve the accuracy.

New accuracy =	
State the steps you took to achieve this accuracy.	