

A stylized graphic of a human brain in purple and blue. The brain is connected to a circuit board with various blue lines and circular nodes. Inside the brain, there are code symbols: curly braces {}, less than/greater than </>, and a question mark. The brain is oriented with the left side in purple and the right side in blue.

# AI Challenge

## SAMPLE QUESTIONS

**Tool:** PictoBlox (Python-Coding Environment)

**Group 3: Senior (1st Preparatory - 3rd Preparatory)**

# Question 1:

You need to build a QR code detection app that reads QR code data from the camera then saves this data in a file, which function will be used to start searching for QR codes after opening the camera as shown in the figure?

- (a) qr.searchQR()
- (b) qr.analysecamera()
- (c) qr.opencamera()
- (d) qr.search()

```
# QR Code Reader
qr = QRCodeScanner()
qr.video('on')
while True:
    _____
    if qr.isdetected():
        data = qr.codedata()
```

## Question 2:

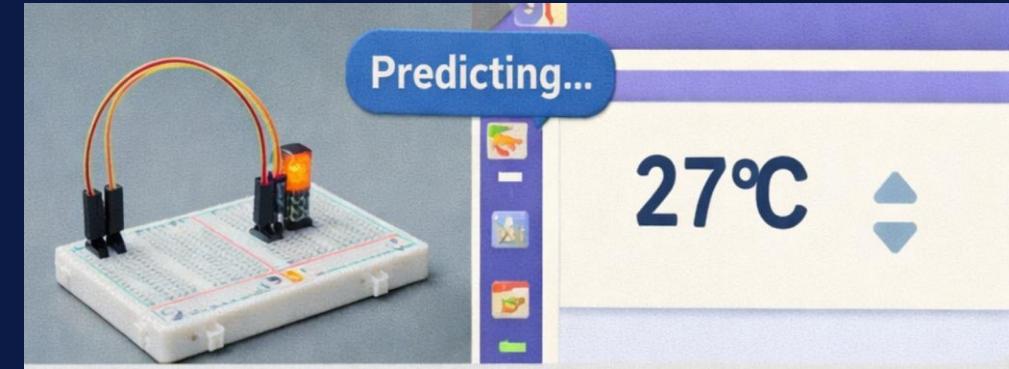
You want to build a game using machine learning that uses the camera to recognize different hand gestures like thumbs up, fist, or open hand, and perform different actions based on the hand shape as shown in the figure. What's the best model should you use for this task?



- (a) Image classification model
- (b) Natural language processing model
- (c) Number regression model
- (d) Hand pose classification model

## Question 3:

You want to build a machine learning model that will be used by a hardware project to predict the temperature based on sensor readings, as shown in the figure. Which machine learning model should you use for that task?



- (a) Image classification model
- (b) Natural language processing model
- (c) Number regression model
- (d) Hand pose classification model

## Question 4:

Your school is starting a recycling program, and you want to create a project to help students sort trash correctly. The app should look at items through the camera and tell whether they are recyclable, organic, or plastic. You have collected sample images of different trash items. Which machine learning model should you use for this project?

- (a) Image classification model
- (b) Natural language processing model
- (c) Number regression model
- (d) Hand pose classification model

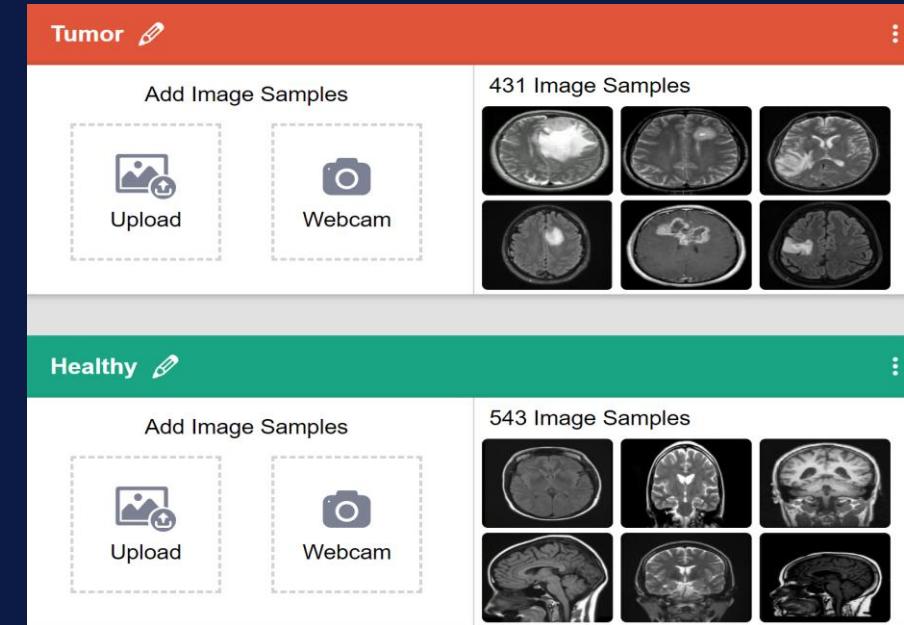
## Question 5:

You are building a project for a school library. The app should read text from students' essays and automatically detect which language the essay is written in. You have collected samples of essays in English, German, and French, but the NLP model cannot start learning until it is given this data. Which function should you use to provide the training data to your NLP model?

- (a) nlp.feedModel()
- (b) nlp.train()
- (c) nlp.pushdata()
- (d) nlp.writedata()

# Question 1:

You started building a 2-class image classification model to help in detecting brain tumors as shown in the figure, which of the following is true?



- (a) Loading more samples will help in improving model accuracy
- (b) There's a class imbalance because the tumor class has fewer samples
- (c) The healthy class samples should be at least twice the tumor class samples
- (d) Both A & B correct

## Question 2:

**You have a dataset of student essays, and you will make 2 tasks:**

- **Task A: Predict the grade (0 to 10).**
- **Task B: Predict if the essay is "Pass" or "Fail".**

**Which models should you use?**

- (a) Task A: Classification, Task B: Regression
- (b) Task A: Regression, Task B: Classification
- (c) Both Regression
- (d) Both Classification

# Question 3:

If you want to build a number regression model to predict home prices using several features, as shown in the figure, but you need to remove a specific feature before training the model, which dataset option should you use to do that?

Dataset									
Select All	Input								Output
	bedrooms	bathrooms	sqft_living	floors	condition	yr_bu	price		
1	3	1	1970	1	4	1970	454000		
2	4	2.5	2340	2	3	2008	445000		
3	4	2	2290	1	4	1955	1058000		
4	3	1.75	2080	1	3	1958	800000		
5	3	2.25	1630	2	3	2005	497000		
6	4	2.25	3310	2	5	1924	1140000		
7	4	2.75	2620	2	3	2013	499431		
8	3	2.5	1700	2	3	2000	300000		
9	6	3	4050	2	4	1970	670000		

- (a) The “Disable” option from the selected columns section
- (b) The “Disable” option from the selected rows section
- (c) The “Delete” option from the selected columns section
- (d) The “Delete” option from the selected rows section

## Question 4:

You are creating a smart chat assistant for your school. The assistant should be able to detect the language of messages sent by students so it can respond correctly. You wrote the code as shown to recognize English messages like “Hello”. When you run your program, the assistant fails. Why?

- (a) You must push more data to the model to let the program run.
- (b) You must push data before you train the model.
- (c) You cannot print the analysis.
- (d) The analyse function should be called before train.

```
nlp = NaturalLanguageProcessing()  
nlp.train()  
nlp.pushdata('Hello', 'English')  
print(nlp.analyse('Hello'))
```

## Question 5:

You are building an AI smart email sorting app for your school. The app should automatically classify incoming emails as either “Homework” or “Announcements.” You upload 500 Homework emails but only 10 Announcement emails to train your model. What will likely happen?

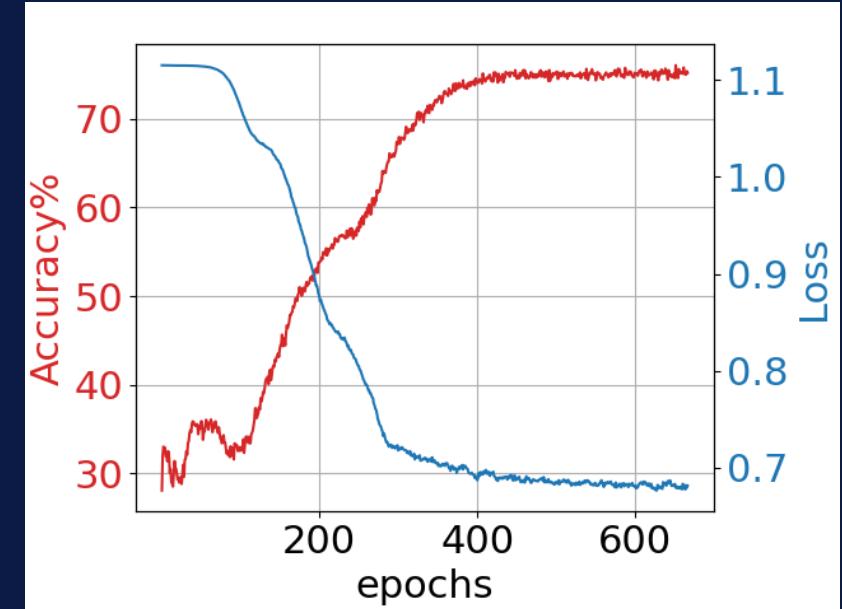
- (a) The model will be excellent at detecting Announcement emails.
- (b) The model will be biased and likely classify almost all emails as “Homework.”
- (c) The model will refuse to train.
- (d) The accuracy will be 100% for both categories.

# Question 1:

You are training a machine learning model to predict students' exam scores based on study hours, attendance, and homework completion. The graph shows Accuracy (%) in red "increases" and Loss (MAE) in blue "decreases" over many training epochs.

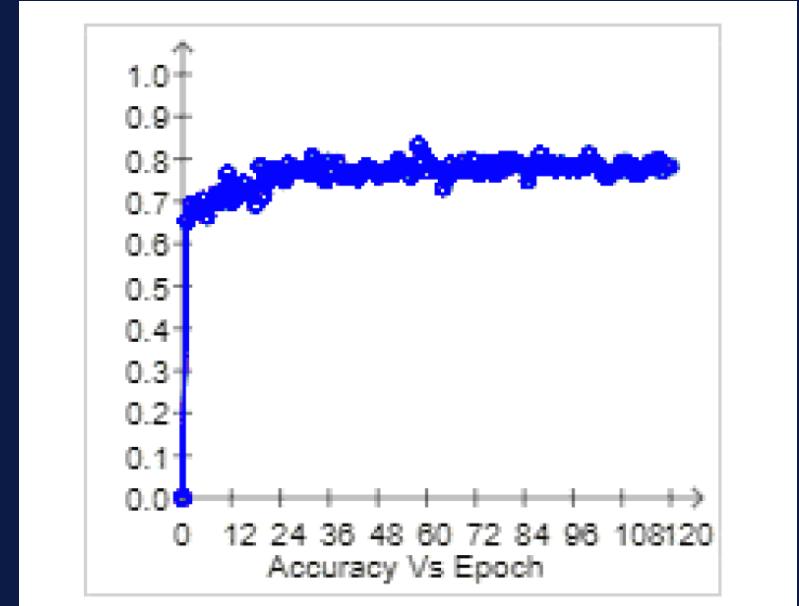
What does this indicate?

- (a) The model is learning patterns and making smaller prediction errors
- (b) The model is guessing more often but reporting higher accuracy
- (c) The training data is shrinking each epoch
- (d) The model is switching from regression to classification



## Question 2:

You have built a hand pose detection model and set the number of epochs to 120 as shown in the figure. You noticed that your model performance didn't improve after the 24<sup>th</sup> epoch, what's the possible reason for that?



- (a) The training data is insufficient or lacks variability
- (b) The number of classes is so many, therefore the model is confused
- (c) The number of classes is too low, therefore the model is confused
- (d) The training data is very variant and diverse

## Question 3:

You are building a smart trash-sorting bin for a recycling center. To avoid mistakes, the bin should open only when the model is more than 80% confident that the item is Plastic. The model gives 2 outputs:

- **result → the predicted class name**
- **conf → the confidence score (from 0 to 1)**

Which condition should you use to make sure the bin opens only when the item is classified as Plastic with more than 80% confidence?

- (a) if result == "Plastic" and conf > 0.8:
- (b) if result == "Plastic" or conf > 80:
- (c) if result == "Plastic":
- (d) Both A & B correct