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# Computer Science – Term 3 (2020-21) Grade 10 – Project Documentation

### **Student Details:**

رقم الطَّالب / Student ID.			
اسم الطَّالب / Student Name			
اسم المدرسة / School Name	Enter your School's name.		
المادّة / Subject	Computer Science		
الصتف والمسار/ Grade & Stream	Choose an item.		
الشّعبة / Class	Enter your class	Date	Enter the date.

#### Table of Contents:

Project Task	Description
Project Introduction	Image classification – ML model
Project Task 1	Traffic sings – Image classification

#### Instructions for each individual Project Task:

- ☑ Expand (▶ button) and complete each Project Task the same week your teacher assigns it.
- ✓ Write the activity book answers for each Project Task (you can write them electronically here)
- ☑ For each Project Task, please add screenshots/images of:
  - your Project Task (to prove you ran the Python program)

*Please note:* Write a brief description for each screenshot/image taken.

 After completing, please submit this document back to your teacher through LMS for marking. (LMS link: <u>https://lms.moe.gov.ae</u>)







## Project Task 1

a) My Project Task 1 Completed Book Page Answers:







#### **Computer Science** G10

The first accuracy refers to the model performance using the same data it was trained on. While the second one, val\_accuracy, refers to the performance when using the testing dataset.

Note: your model accuracy might be higher or lower than the accuracy shown in the provided images.

1) What was the accuracy of the last iteration for your training dataset and testing dataset? validation accuracy : 69.23% accuracy : 95%

Explain why the accuracy of the training dataset is higher than the accuracy of the testing dataset.

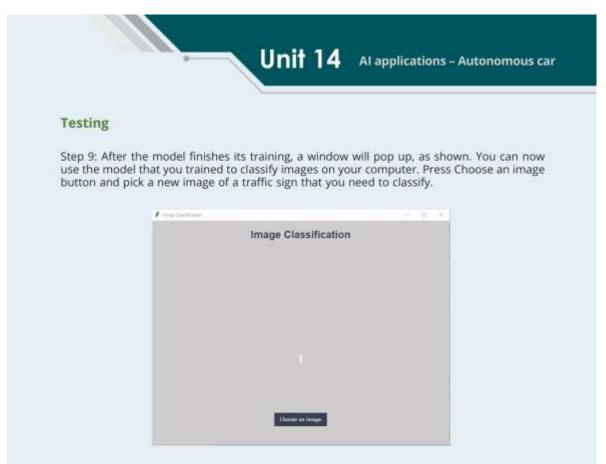
Since the ML model was conditioned on the testing dataset it had already seen the images.

The tested dataset, on the other hand, was shielded from the model and had never been used before.

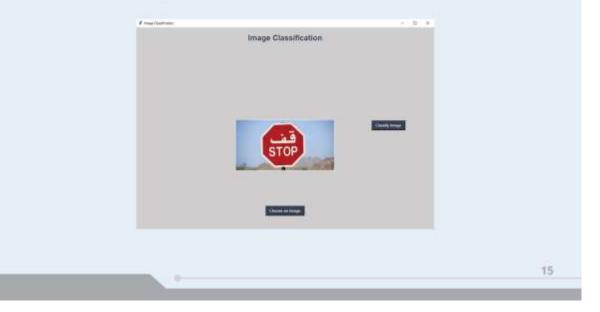
:14







Step 10: Press Classify image button and the program will display the label of that image based on the model prediction.







# Computer Science G10

	it was able to classify the images , but some of them was classified wrong ( about images) .
	you choose an image of a random item that your model was not trained on, will it be abl
	assify it? Why?
No	it will not ba able to classify it correctly ,
l	
5) Ch train	ange the number of iterations to 1, rerun the program. Write your observations on th ing speed, accuracy, and val_accuracy. Explain why it changed.
	e training finished faster than before but it was not accurate because the ML
	del was not given the opportunity to practice several times in order to increase
	uracy.
ucc	
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	ange the image size to 80 and rerun the program. Write your observations on the trainin d, accuracy, and val_accuracy. And explain why speed and accuracy were changed.
	training has took more time but the accuracy and val_accuracy increased
	ed is changed because the image size is bigger , The model was trained with higher bits of
date	
Acc	uracy changed because it can see more features .
i	
	ange the image size to 5 and rerun the program. Write your observations on the trainin d, accuracy, and val_accuracy. And explain why speed and accuracy were changed.
	training took more time than (Size80) and the accuracy and val_accuracy decreased ed is changed because the image size is smaller , The model was trained with fewer bits of
date	
•	uracy changed because it can't see all the features and the images where small





فؤسسية الإمبارات للتعليم المدرسي EMIRATES SCHOOLS ESTABLISHMENT

# Unit 14 Al applications - Autonomous car

8) If the image of a traffic sign was captured in different light conditions, how can this impact the model's accuracy? Why?

The model's accuracy would suffer as a result. Since the training was performed on a small dataset, various lighting conditions were not taken into account.





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#### **Computer Science** G10

9) Does the environment in the real world usually change? Mention how. Yes, the environment does change. Some days the weather is rainy, windy or sunny



10) If an autonomous car had an accident in the real-world, discuss who should be responsible: the car manufacturer, the person in the car or the ML model. The responsible will be the manufacturer because sometimes technology simply fails , As anyone who has tries t operate a regular vehicle knows , brakes can go bad and engines can fall





فؤسســة الإمـارات للتعليــم المدرسـي EMIRATES SCHOOLS ESTABLISHMENT



	Unit 14	4 AI applications - Au	itonomous car
11) Mention some adv	antages of using an autonom	ous car.	
reduces emissions road safety economic benefits less accidents saving in fuel			
27) Marshar and dia	d and an a final an an a dama		
Wrong programming Expensive No privacy Hacking issues	dvantages of using an autono	mous car.	
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## b) My Project Task 1 Screenshots & Testing Images:

My Screenshots & Testing Images	Screenshot/Image Description
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