Task 5 D: Custom vision

This document supplies detailed information on Assessment Task 5 for this unit.

Key information

- **Deadline: 14th April 2024, by 11.59 pm IST**
- **This assignment is <u>only</u> for students who are aiming for D and <u>HD</u>.**

Overview:

During week 4, you have learnt about computer vision as one of the important AI services and we have discussed some of the advanced machine learning models in this area. We also explored Azure computer vision and went through the codes on how you can use Azure computer vision and custom vision services. We have briefly discussed custom vision in Azure.

In this task, you need to complete the following part:

1) Develop a program using Azure custom vision service to detect vehicles (car, bus, bicycle, etc. (up to 3 vehicles)) and track them in a one-minute video. You can find the videos from the following dataset: https://www.kaggle.com/datasets/robikscube/driving-video-with-object-tracking/code
To complete this task you need to use Azure custom vision for this task. The application must be developed using Python language, and Azure custom vision can be used for this task. It is important to use a small dataset of 50-100 images to train the custom vision program to recognise different types of vehicles accurately.

Submission details:

For this task you need to complete the following part:

- Develop a near real-time vehicle tracking application using the provided dataset. Your application should analyse video frames from a one-minute video using azure custom vision. In this assignment, you need to collect a dataset with different types of vehicles and label the images with corresponding vehicle type. Then you need to train your dataset using Azure custom vision and then deploy the model. You need to use the deployed model to track the vehicle in one-minute video. **To decrease the cost of API usage, you need to send one frame per second to the API**. The selected frames

will be sent to the API to detect different vehicles. You will need to provide a demo (video) of how the model is developed and working (Max 3 mins)

Submit the following files to Ontrack:

- **Submit your answers as a PDF file into the Ontrack. You need to explain cell by cell of <u>your code and the process for each part</u>. You need to provide the Screenshot of your code running and a demo (video) of your code that is running (Max 3 mins)**

Referencing

You must correctly use the Harvard method in this assessment. See the Deakin referencing guide.

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