SE4050-Deep Learning   **Semester 2, 2022**

Computer Vision

Activity 01

- Open Google colab. Upload the 1D_Convolution.ipynb to colab. Run all cells. Based on the result, explain how 1D convolution can be used to identify the edges in an image.
- Upload the Image_Filtering_(Convolution).ipynb file to colab. Change the filters and see if you can obtain different kinds of edges from the image. Download the modified ipynb file.
    - **Note:** You may have to copy the lenna.png image to the google drive path mentioned in the file in the notebook file. When you run the notebook for the first time, you may have to click the authorization link and enter the authorization code to the text box displayed.

- Upload the CNN_with_keras3.ipynb file to colab. Increase the number of epochs to 50.
    - Why does the validation error increases when the number of epochs are increased? Explain how you can modify the training process to stop that from happening.
    - Explain how the mini batch SGD (Stochastic Gradient Descent) algorithm can converge faster than the batch Gradient Descent algorithm.

Activity 02

- Upload Face_Recognition_for_the_Happy_House_v2.ipynb to Google colab.
- Upload the fr_utils.py and inception_blocks_v2.py files to the root (content) directory of the VM.
- Create a folder called 'images' in the root (content) directory in the VM and upload the images in the images directory to the images directory in the VM.
- Upload the file weights.zip file to the VM root (contents) directory.
- Run the Jupyter notebook.
- Upload an image of yourself to the images directory and encode and add it to the database mentioned in the notebook.
- Instead of the image of Younes, use another image of yourself to do both face verification and face recognition.

Submission:

Write the answers to questions 1 and 3 for activity 01 in a PDF document. The name of the PDF should be your ID number.

Upload the modified Face_Recognition_for_the_Happy_House_v2.ipynb and Image_Filtering_(Convolution).ipynb .

Put all 3 files into a single Zip File and and rename with your ID. Upload the Zip File by the End of the Day.

Cut off date: 11:59PM on 11th September 20