EE5934/6934 DEEP LEARNING PROJECT#1

(100 MARKS)

Introduction

In this project, you will explore the use of k-fold Cross-validation test image gradients by applying it on the following **three tasks**:

5-layer

- **Determine the best 2-layer MLP structure.**
- **Class Visualization**: "Deep Inside Convolutional Networks: Visualising Image Classification Models and Saliency Maps" and "Understanding Neural Networks Through Deep Visualization"
- **Style Transfer**: "Image style transfer using convolutional neural networks"

Please go through the above reference papers very carefully. You are expected to understand **how to accomplish each task** using the methods presented in the papers and **write code to implement them** by completing Project1.ipynb which is available in Project1.zip from LumiNUS.

Please **take careful note** of the following (failure to do so could incur penalties):

- Your code **MUST** be kept within "TODO" and "END OF YOUR CODE";
- Do **NOT** modify the definitions of the functions in Project1.ipynb;
- Write "**clean**" (easily readable) code and check to make sure it runs/executes;
- Do **NOT** **share your solution code** with others; **submit your own work/code**; there will be **penalties for cheating** and late submission.

Project#1 submission (**Deadline: 6PM, Saturday 6 March 2021**)

I. Export your notebook file Project1.ipynb to an html page and include it in the Project1 folder. Please make sure that the **submitted notebooks have been run** and **the cell outputs are visible**.
II. **Compress** the Project1 folder into a zip file and **rename it** as follows before uploading it to LumiNUS: "YourStudentNumber_Project1.zip".

Grading Notes

The each task will contribute to your overall grade for Project#1 as follows: **MLP structure search** (20%), **Class Visualization** (20%) and **Style Transfer** (60%). Your submission will be assessed on the quality, correctness and efficiency of your codes. You are also required to provide an analysis of the "style transfer" part.