Assignment 3- FIT5221 - Dr. Abhinav Dhall
Due – 28th August 11.55PM Suzhou

Group-level task

Note – Your group has been assigned (same as Week 7 tutorial), make sure that you work with your group only.

Task -

During Week 7 tutorial you presented a system, which could create summary of a video. In this assignment with your same team mates, you need to create a prototype of that system. The presentations in Week 7 have resulted into good ideas!

The input to the system is a video and the system outputs important frames from the event, which summarize the key happenings of the event. For eg: if an input video is that of a birthday party, key summary points can be image with cake cut, smiling people etc. The goal of the system is to output a set of images which are engaging and provide an affective summary of the event.

3 marks for logic of sorting and analysing images

The function *generateCoolSummary()* takes into input the relative address of frames (from a short duration video) and returns the following two

a. Collage of important frames chosen by your method. Now instead of the collage having images placed in rigid grids (like in Assignment 1) merge the boundary areas of images to make the collage look more seamless. (3 marks for this output)
   An example is below:

Source: Mehta and Dhall, FG 2018 demo.

Notice in the collage above, the four images have been merged and do not have a strong boundary. One way to do this is that for a given border region of two images, which one wishes to overlap is to compute the following for each pair of corresponding pixels from the two images -

*Output_Value = Alpha * RGB_Image_1 + (1-Alpha) * RGB_Image_2*
Alpha can be determined empirically.

b. Convert the important frames into a GIF (2 marks)

In your group discuss and code–

a. Role of each team member, who codes what.
b. Detailed report
c. The report should contain the flowchart of the system, the time required for the output to be generated.
d. Work together like a team!

Information to upload in a single zip file –

1. One Jupiter notebook containing code, which runs on colab like environment
2. Folder containing frames from a video
3. Report discussing the method details, few sample outputs and contribution of each team member (2 marks)

Note –

1. For object detection, if you wish to use - you can **only use** the two pre-trained models (SSD and Faster RCNN) discussed in Week 8 tutorial. Only boxes generated using the pre-trained model can be used.
2. Only usage of Pre-trained models available in tensorflow.org API can be used for extracting features to represent an image or part of an image.
3. Make sure that the total processing time is no longer than 5 minutes on Google colab or similar system.