German University in Cairo
Faculty of Media Engineering and Technology
DMET1067 - Deep Learning in Computer Vision
Spring Semester 2021

Course Project

Total Points 100 –Due to Wednesday June 30th 2021

Regulations:

1- You may work in teams up to **5** students. Small groups are recommended to ease the communication among group members.

2- The deadline is on Wednesday 30/06/2021 at 8:00 am of the next morning.

3- Submit your work to mamegeed2@gmail.com.

4- The Subject of the Email is [DL4CV]Proj-[ID1_ID2_ID3_ID4_ID5]

5- The deliverables are (in one .zip file named as the email subject):

   a. Source Code (Use comments to describe the code lines).

   b. MS-Powerpoint presentation of your work. The file should be prepared for 5-10 min presentation. The title page of the report should include the project title, and the date of submission. A slide should contain names of all team members, their Uni-IDs and emails.

   c. Presentation video recording. Try to distribute the slides among the group members so that each member presents part of the work.

   d. The title page of the report should include the project title, date of submission your names, ids and emails.

6- Add all your names, Uni-Id and emails inside the source code and in a separate notepad file with “names.txt” as file name.

Project Guidelines:

1- You can propose a topic of your own but in all cases the input of the model must be a pixel from an image, an image or a video.

2- You should link the model you will create to the materials addressed in this course.

3- I don't care about the accuracy, I care about the complete pipeline from inputs to outputs.

4- You should create part of the dataset, even for testing only.

Suggested Topics

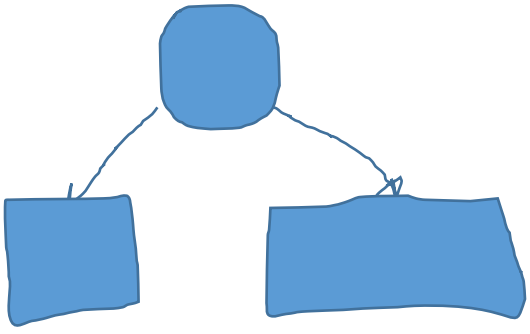
1- Re-create the Cat Paper. Create an autoencoder to draw a face of cat.

2- CNN for action recognition. Recognize actions from video scene. It is an image classification task, where the classification classes are people actions. Select about 10 actions, as hand shaking, two-people talking, group of people talking, walking in groups, walking individually, running, driving, Eating individually, Eating with a group of people, dancing, etc..., Create a dataset from Egyptian movies for testing.

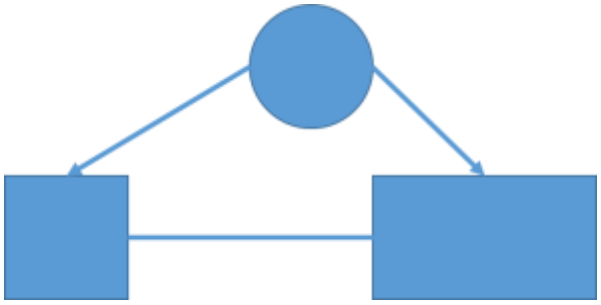
Driving

Group Dining -

3- Hand drawing diagrams recognition and vectorization. Hand drawings of structured diagrams for the use in educational presentations or for industrial illustrations need much less time and are more comfortable than using digital SW for creating them. However, they looks unprofessional. So the idea is to create a model to recognize the basic shapes in hand drawings and creates corresponding vector diagrams. The shapes may include: circle, ellipse, triangle, rectangle, square, diamond, line.



Hand sketching



Generated structured diagram

4- Object recognition from hand sketches. The idea is to recognize some basic objects like, car, airplane, ship, cat, dog, etc. from simple hand sketch.

5- Style transfer from artistic work to real scene images of people.