

Assignment#1

Due Date: 17 Feb 2021

Part-A: Research Paper Presentation (10 Points)

Select a research paper in the field of Computer Vision preferably published after 2015 and record a presentation (with audio).

Students need to get the paper approved from the instructor.

Ones approved fill in the below google sheet:

https://docs.google.com/spreadsheets/d/19KNUmSiilVi8P_UlUbKHiGPx-1yL45GcDk-eYxAnXE/edit?usp=sharing

Following is the rubrics on which the students will be evaluated for the presentation.

1. Has the student clearly explained the core idea/concept/architecture in the paper?
2. Clarity of the slides (place only relevant contents on the slide with slides well formatted)
3. Clarity in presentation.
4. Citation of any figures, tables etc.
5. IEEE reference
6. Discuss on the results highlighted in the paper/article.
7. Personal critic about the paper/article (For example did you like the paper or not, do you think something missing in the paper, are you satisfied with the methodology, any personal thought on the paper).

Part-B: Landmark detection model (10 points)

Facial landmarks are used to localize and represent salient regions of the face, such as: Eyes, Eyebrows, Nose, Mouth, Jawline

Facial landmarks have been successfully applied to face alignment, head pose estimation, face swapping, blink detection and much more.

Build a Facial landmark detection model that could go into the pipeline for a facial recognition system.

You should have all necessary components of a ML/DL model starting from any required pre-processing to model saving and prediction on new datapoints.

The code should be completely run without any errors and should be readable.

You will also be having marks for commenting the necessary lines of code, writing appropriate section names and writing a suitable conclusion. You should also include what each chunk of code does.

Students should also include a good detailed explanation of the chunks of code.

A good example of a well written code with appropriate comments and a section heading is as below: { Please note this is just a random example and not the code for your assignment }

Extract features from each photo in the directory

```
In [ ]: def extract_features(directory):
        # Load the model
        model = VGG16()
        # re-structure the model
        model.layers.pop()
        model = Model(inputs=model.inputs, outputs=model.layers[-1].output)
        # summarize
        model.summary()
        # extract features from each photo
        features = dict()
        for name in listdir(directory):
            # Load an image from file
            filename = path.join(directory, name)
            image = load_img(filename, target_size=(224, 224))
            # convert the image pixels to a numpy array
            image = img_to_array(image)
            # reshape data for the model
            image = image.reshape((1, image.shape[0], image.shape[1], image.shape[2]))
            # prepare the image for the VGG model
            image = preprocess_input(image)
            # get features
            feature = model.predict(image, verbose=0)
            # get image id
            image_id = name.split('.')[0]
            # store feature
            features[image_id] = feature
            print('>%s' % name)
        return features
```

Rubrics:

1. Readability of the code (1 marks)
2. Proper comments to the code, section heading, explanation of the chunks of code – 2 marks
3. Research-1 marks
4. Conclusion, Recommendation, Insights- 1 marks
5. Fully working code with no error and gives the desired output- 5 marks

Submission Format: In the DC Connect, post **the jupyter notebook file**.

Academic Integrity and Late submission:

Late assessments will be subject to a 20% per calendar day late penalty unless otherwise stated by the professor. Students should communicate with the professor in advance of a due date for any requests for an extension as a result of exceptional circumstances.

Any violation of academic integrity will not be accepted and will be given a grade of zero (0). Please watch this video on academic integrity.

https://www.youtube.com/watch?v=BnEw72e_YYo&feature=youtu.be