Assignment-2: Detection and Segmentation (Q 1 to 4 - 50 Marks)

Instructions:
[1] Any plagiarism will lead to award of **F grade** STRICTLY
[2] Use python only for the implementation of all the assignments
[3] Use NumPy to represent the vector and array
[4] Do not use the inbuilt functionality of any library including NumPy until suggest so.
[5] PyTorch must be used to implement the deep learning-based methods.
[6] One mark will be deducted for each late day.
[7] Submit via Moodle only. Email submissions won't be considered.

No.	Questions	Marks
01	Comparative analysis of Recent 5 **face detection and recognition** models. ■ Datasets: UMD Face, PASCAL Face, AFW, FDDB, UFDD, or Other from https://paperswithcode.com/datasets?task=face-detection&page=1 ■ Recent Models: https://paperswithcode.com/task/face-detection ■ You can train or use pre-trained models if available for large dataset but train one from scratch ■ Compare the evaluation metrics as well as run-time performance memory CPU/GPU usage and avg. clock time per detection/image/fps ■ Present the results using tables, plots, qualitative results with good and bad examples	10
02	Comparative analysis of Recent 5 **segmentation models** on 3-5 datasets. ■ Models: UNet, Mask-RCNN, FPN, DeepLabV3, https://paperswithcode.com/task/semantic-segmentation ■ Datasets: ChestX-ray https://paperswithcode.com/paper/chestx-ray8-hospital-scale-chest-x-ray, or others from https://paperswithcode.com/datasets?task=semantic-segmentation ■ You can train or use pre-trained models if available for large dataset but train one from scratch ■ Compare the evaluation metrics as well as run-time performance memory CPU/GPU usage and avg. clock time per image/fps ■ Present the results using tables, plots, qualitative results with good and bad examples	10
03	Comparative analysis of Recent 5 **person re-identification** models on 3-5 datasets. ■ Datasets & Methods: https://paperswithcode.com/task/person-re-identification ■ You can train or use pre-trained models if available for large dataset but train one from scratch ■ Compare the evaluation metrics as well as run-time performance memory CPU/GPU usage and avg. clock time per detection/image/fps ■ Present the results using tables, plots, qualitative results with good and bad examples	15

04	Comparative analysis of Recent 5 **Action/Activity Recognition** methods on 3-5 datasets.	15
	■ Datasets & Models: https://paperswithcode.com/task/action-recognition-in-videos	
	■ You can train or use pre-trained models if available for large dataset but train one from scratch	
	■ Compare the evaluation metrics as well as run-time performance memory CPU/GPU usage and avg. clock time per video/fps	
	■ Present the results using tables, plots, qualitative results with good and bad examples	