Assignment 4

Assignment due: **04/13/2024 11:59 PM EST**

Late submission due: 04/20/2024 11:59 PM EST with 10% grade penalty

Submissions after 04/20/2024 11:59 PM EST will not be accepted

Submission format: please submit a report for Task 1 & 2.

Task 1 : Paper Reading - 35%

Read the paper: FairFace: Face Attribute Dataset for Balanced Race, Gender, and Age for Bias Measurement and Mitigation, WACV'21. Answer the following questions based on the content of the paper:

- What is the issue in several commercial face recognition systems and face recognition datasets? - 10%
- What are the evaluation metrics used in experiments? Please illustrate all metrics used in tables and figures from the experiment section. - 15%
- How does the paper define and measure the bias in face recognition? - 10%

Task 2 : Measure the Bias in Deepface - 65%

Recall we had the *Deepface* face recognition framework in Assignment 1. You are asked to detect if there is any bias issue in *Deepface* using the FairFace dataset.

Download the FairFace dataset: https://github.com/joojs/fairface.

Use the age estimation API in *Deepface* to predict the age of all images from the validation set of the FairFace dataset. Verify whether the predictions fall within the ground-truth range, and determine the degree to which they deviate from it, if any. Check if the error is biased in terms of gender and race.

You can follow the metrics used in the FairFace paper and/or design reasonable metrics that reflect the degree of bias in age estimation of *Deepface*. Report your numerical results and observations. Numbers best in tables or figures.