

1. Various unwanted biases in image datasets can easily occur due to biased selection, capture, and negative sets.

Dataset:

systems are often trained on datasets that are not diverse enough, leading to a lack of representation of certain groups.

Systems:

Face recognition algorithms can be biased if they are designed to favor certain groups over others. Also, even if a face recognition system is designed to be fair and unbiased, it can still be deployed in a biased manner.

2. Demographic Parity Difference (DPD): DPD measures the difference in true positive rates (TPRs) between the demographic group with the highest TPR and the group with the lowest TPR. A larger DPD indicates greater bias in the system.

Demographic Parity Ratio (DPR): DPR measures the ratio of TPRs between the demographic group with the highest TPR and the group with the lowest TPR. A value of 1 indicates perfect parity, while values greater than 1 indicate greater bias against the group with the lowest TPR.

Equal Opportunity Difference (EOD): EOD measures the difference in TPRs between two groups. A larger EOD indicates greater bias in the system.

Equal Opportunity Ratio (EOR): EOR measures the ratio of TPRs between two groups. A value of 1 indicates perfect parity, while values greater than 1 indicate greater bias against the group with the lower TPR.

t-SNE visualizations: visualize how different demographic groups are separated in feature space.

3. The paper defines bias in face recognition as "systematic inaccuracies or disparities in the performance of face recognition systems across different demographic groups, such as race, gender, and age."

To measure the bias the paper used the metrics mentioned before.