Machine Learning Fairness

Group1:

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Please access our code file via the links listed below:

[LFR](https://github.com/TZstatsADS/ads-spring2023-project4-group_1/blob/main/lib/LFR.ipynb)

[CLR](https://github.com/TZstatsADS/ads-spring2023-project4-group_1/blob/main/lib/LR%20constrained.ipynb)

[CSVM](https://github.com/TZstatsADS/ads-spring2023-project4-group_1/blob/main/lib/c-svm.ipynb)

The performing metrics of each model is shown as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Model | Accuracy | Calibration | Parity | Equality of Odds |
| LFR | 0.517 | African American: 0.491  Caucasian: 0.557 | African American:0.388  Caucasian: 0.270 | African American:  Positive: 0.219  Negative: 0.273  Caucasian:  Positive: 0.127  Negative: 0.433 |
| CLR | 0.838 | African American: 0.834  Caucasian: 0.845 | African American: 0.468  Caucasian: 0.579 | African American:  Positive: 0.772  Negative: 0.911  Caucasian:  Positive: 0.996  Negative: 0.732 |
| CSVM | 0.711 | African American: 0.704  Caucasian: 0.722 | African American: 0.534  Caucasian: 0.375 | African American:  Positive: 0.8  Negative: 0.2  Caucasian:  Positive: 0.475  Negative: 0.08 |

Among these three algorithms, Constraint Logistic Regression (CLR) has the best performance metrics. Hence we regard it as the one closest to the truth.