






will be making use of a package called **aif360** which is been developed by IBM, you can find the package details and demo [here](https://aif360.res.ibm.com/)  [\(https://aif360.res.ibm.com/\)](https://aif360.res.ibm.com/).


3. Useful tutorial pages are hyperlinked throughout this document and starter code, they give you an understanding of how to use various libraries and functions.
4. The python packages that are allowed for lab 5 include pandas 1.4.4, numpy 1.23.2, sklearn 1.2.0, matplotlib 3.5.2, seaborn 0.12.0 and aif360[all]
5. It is Ok that your code is similar to any code snippet from the [official sci-kit learn](https://scikit-learn.org/stable/index.html)  [website](https://scikit-learn.org/stable/index.html), but if you are using any other code snippets from the internet, you must cite them as comments in your python code.
6. If you cannot achieve the required metrics performances, play with the model architecture and hyperparameters. As stated in bullet point 3, simply using code from the tutorial page probably won't give you the desired performance for this lab.

## Fairness in Machine Learning

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[Lab 5 \(part 2\) template.py](https://asu.instructure.com/courses/154822/files/67450271?wrap=1)  [\(https://asu.instructure.com/courses/154822/files/67450271?wrap=1\)](https://asu.instructure.com/courses/154822/files/67450271?wrap=1)   
[\(https://asu.instructure.com/courses/154822/files/67450271/download?download\\_frd=1\)](https://asu.instructure.com/courses/154822/files/67450271/download?download_frd=1)

1. Name your file **fairness.py**.
2. You can also download the data from the UCI repository if you want to test it on your local machine. You need to download all three files named [adult.data](https://archive.ics.uci.edu/ml/machine-learning-databases/adult/adult.data)   [\(https://archive.ics.uci.edu/ml/machine-learning-databases/adult/adult.data\)](https://archive.ics.uci.edu/ml/machine-learning-databases/adult/adult.data), [adult.names](https://archive.ics.uci.edu/ml/machine-learning-databases/adult/adult.names)   [\(https://archive.ics.uci.edu/ml/machine-learning-databases/adult/adult.names\)](https://archive.ics.uci.edu/ml/machine-learning-databases/adult/adult.names) and [adult.test](https://archive.ics.uci.edu/ml/machine-learning-databases/adult/adult.test)   [\(https://archive.ics.uci.edu/ml/machine-learning-databases/adult/adult.test\)](https://archive.ics.uci.edu/ml/machine-learning-databases/adult/adult.test)

3. Copy and paste it to the adult folder present at the location aif360/data/raw/adult in the aif360 package. Refer [here](https://github.com/Trusted-AI/AIF360/tree/master/aif360/data/raw/adult)  (<https://github.com/Trusted-AI/AIF360/tree/master/aif360/data/raw/adult>) for more details.
4. Get the dataset and split it into train and test
5. You need to create two different Adversarial models one with debiasing other without debiasing
6. Use ClassificationMetric from the metrics module to get all the classification metrics for the predicted and original test data
7. Store balanced classification accuracy, and equal opportunity difference for both models as plain\_model\_classification\_accuracy, plain\_model\_equal\_opportunity\_difference, debias\_model\_classification\_accuracy, debias\_model\_equal\_opportunity\_difference respectively.
8. Remember don't cheat by just assigning values to these variables, otherwise, you will get 0 immediately.
9. Please see more details in the templates.

This tool needs to be loaded in a new browser window

Load Unit 5 Lab 2: Fairness in Machine Learning in a new window