

Unbiased Facial Recognition Technology Rubric

DS2004 - Spring 2023 - Professor Reia

Due: February 24th, midnight

Submission Format: Link to Repository (collab assignments)

Individual Assignment

General Description: Submit to Collab Assignments a link to your case study repository that includes the provided code with adjustments made for your final training data selection. The repository should also include both the training and testing data folders used in your final classifier as well as a table of the results of each trial and a reflection for why you think your final training set outperformed others.

Preparatory Assignments: Class sessions about training and testing data sets in model building, class about biases integrated into technology, class about designing fair and unbiased technology.

Why am I doing this? Reading and completing case studies allow us to see how we can use our problem solving and technical skills to solve real world problems. In this case study, we are focused on improving current technology and training models to be fair and equitable when used in society. It goes a step beyond just creating the technology and getting it to work by improving the design to be more user-centric and less biased. In this case, we are tackling a hypothetical situation based on real world current events. You are encouraged to work the case study on your own, basing your strategy on research about the topic. You should also reflect on what worked and didn't work and think about how this applies to our broader world and what we've discussed in class.

- Course Learning Objective: biases in technology (nb: placeholder)
- Course Learning Objective: training models (nb: placeholder)

What am I going to do? You will begin by reading the one-page prompt for this case study. In that prompt you will be given a task. In order to complete the task, you will have to download code in the form of a jupyter notebook file and data from [This Github Repository](#). Before testing solutions, start by hypothesizing what you think will be optimal. Think about why you think certain solutions will perform better than others based on our class discussions. Browse the articles provided in the repository that shed light on the topic. The articles can be found in the Materials folder. After researching and hypothesizing, begin testing solutions. This task will require lots of trial and error – make sure you record the inputs and results of each trial. The deliverable will consist of the inputs and results of your final solution. You will submit the code adjusted for your final inputs, as well as the data folders resulting from your final inputs, and a

written reflection on why your final training set outperformed others in terms of accuracy and how this connects with what we learned in class.

Tips for Success

- Draw on what we've discussed in class. What have we learned about biases integrated into technology and how we can design more equitable solutions?
- Read the background articles provided. This case study is based on current events. Read the news articles provided to get a better sense of what the problem is and how it could be improved.
- Try many ideas. Since the code is provided to you, this case study is more focused on the ethics behind the model rather than the model itself. Use the time you'd spend coding the model testing numerous different solutions to try to build the most unbiased classifier.

How will I know I have succeeded? You will meet expectations on Unbiased Facial Recognition Technology Case Study when you follow the criteria in the rubric below.

Spec Category	Spec Details
Formatting	<ul style="list-style-type: none">• Repository – A cloud storage folder containing all materials<ul style="list-style-type: none">○ Submit a link to repo○ Contents<ul style="list-style-type: none">■ Code with your adjusted inputs■ Data (final training data as well as test data)■ Results/Reflection○ Use pdf format for documents○ Code should be a jupyter notebook file as originally provided
Code	<ul style="list-style-type: none">• Goal: The original code provided, but updated with the inputs of your final classifier<ul style="list-style-type: none">○ Things to be adjusted:<ul style="list-style-type: none">■ Number of images from each racial group■ Path to directories as needed• This updated code should reflect your final classifier with the highest accuracy after several trials<ul style="list-style-type: none">○ The number of images of each racial group should reflect the optimal training set of images you used to achieve max accuracy
Data	<ul style="list-style-type: none">• Goal: The final training and testing data sets

	<ul style="list-style-type: none"> ○ The training set should remain the same as one provided to you ○ Testing set should be comprised of images after you ran the code indicating how many images from each racial group you wanted in your training set ○ Please organize it as in the original Github repo
Results/Reflection	<ul style="list-style-type: none"> ● Goal: a document showing all of your trials and indicating your optimal trial as well as a reflection for why you think this training set outperformed others ● Use a table format to show the inputs (number of images from each racial group) and outputs (test accuracy) of each of your trial ● Highlight your optimal trial – this should match what is in the final code you submit ● Reflection should highlight why you think this training set outperformed others drawing upon articles provided and what we learned in class ● 1 page for results ● 1 page for reflection ● Pdf format

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