

ASSIGNMENT: Group Assignment

Course Title : Bachelor of Computer Science (Hons)
Course Code : XBDS2024/N
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BRIEF

The field of machine learning presents several challenges, and the presence of biases in machine learning is one of them that needs to be carefully addressed.

Therefore, it is important to reduce biases in machine learning models to ensure that the model is fair and unbiased in its predictions and decisions. There are several steps that can be taken to mitigate bias in machine learning models. These include using a diverse and representative training data set, removing sensitive variables, using techniques to mitigate bias, periodically evaluating the model, and using human supervision.

While it is not possible to completely eliminate bias, these steps can help reduce it and ensure that the model is as fair and unbiased as possible. It is important to periodically review and update the model to ensure that it remains fair and unbiased over time. It is important to note that biases in machine learning models can be difficult to detect and a combination of the above approaches may be required.

Therefore, select any use case to prove how to reduce bias in machine learning implementations to solve your problem.

Topics are not limited to the following:

1. Bias in data acquisition
2. Bias in pre-processing
3. Bias in feature engineering
4. Bias in data selection
5. Bias in model training
6. Bias in model validation

REQUIREMENTS

1. If you do not attend the walkthrough the maximum mark you can achieve for this assignment is **40%**.
2. You will need to bring one hard copy of your product to provide the walkthrough. The walkthrough will take place in **week 7** and **week 11**.
3. Please do not submit hand-drawn diagrams. Hand-drawn diagrams or hand-written reports will receive **zero (0) marks**.
4. Your submission documentation's content should include the following items:
 - Report
 - Teamwork Evaluation Form
 - Assessment rubric

ASSESSMENT CRITERIA

Report: 20%

1. Methodology – 30% of marks

It must be a complete, clear, unambiguous English description of the analysis you performed. This should be sufficient for someone else to write a Python or R program (or perform manual computations) that reproduces your results, without access to your source code, and without having to guess or make significant design choices.

2. Implementation – 30% of marks

The product you produce for this assignment must be produced in Python or R.

It should be built to a good standard and fit for the intended purpose. Code should be well laid out and commented, and should make use of appropriate techniques.

3. Results & Discussion – 40% of marks

You explain and discuss the outcome of your implementation using descriptive statistics and visualizations as a result of the methodology [or methodologies] you applied. The results should simply state the findings, without bias and be arranged in a logical sequence.

Communication Skills: 10%

1. Presentation – 50% of marks

The presentation defines as the ability to engage effectively in verbal, non-verbal, written, and/or symbolic communication. You should have effective communication of the product demonstration. Your explanation and discussion of the work carried out, handling of questions and responses to markers.

2. Teamwork - 50% of marks

Teamwork assesses the effectiveness of a group working as a team, not as an assessment of an individual student's ability to work on a team.