Exploratory Analysis

Lab 4

Today you will learn about different types of biases that can manifest in model data. It is important to explore feature data to proactively identify potential sources of bias before doing any further analysis.

Overview

In this exercise, you'll explore datasets and evaluate classifiers with fairness in mind, noting the ways undesirable biases can creep into machine learning (ML). When performing tasks in the area of machine learning, it is important to understand your dataset before diving straight into the analytic task.

Explore the Adult Dataset to gain an insight into its characteristics and find inherent biases in the data. (data source: https://archive.ics.uci.edu/ml/datasets/Census+Income)

Description of data

Total number of records: _____

Number of fields: _____

List field names:

_____
_____
_____
_____

Task 1

Create visualisations for each of the features in the dataset to explore the data in terms of fairness and completion.

Some important questions to investigate when auditing a dataset for fairness:

- Are there missing feature values for a large number of observations?
- Are there features that are missing that might affect other features?
- Are there any unexpected feature values?
- What signs of data skew do you see?

Task 2

1. How would you describe the relationship between education level and income bracket?
2. What noteworthy observations can you make about the gender distributions for each marital-status category?

As you perform the above tasks, keep the following fairness-related questions in mind:

- What's missing?
- What's being overgeneralized?
- What's being underrepresented?
- How do the variables, and their values, reflect the real world?
- What might we be leaving out?

Tutorial from:

https://colab.research.google.com/github/google/eng-edu/blob/master/ml/cc/exercises/intro_to_fairness.ipynb?utm_source=mlcc&utm_campaign=colabexternal&utm_medium=referral&utm_content=fairness-colab&hl=en#scrollTo=qZ-9vJgSEpHj