

Activity 5

Teachable Machine Instructions

Lesson (45 minutes)

Objectives

- Learn how to create to create a fair machine learning model with Google's Teachable Machine

Resources

- [Link to the slides for this activity.](#)
- The file name for the slides is titled, "Class_Imbalance_slides.pdf". The slides can be utilized to assist students with following along with the instructor.

Vocabulary

- **Artificial Intelligence:** a set of algorithms, than can make decisions with unforeseen circumstances
- **Machine Learning:** an algorithm that learns about data and find patterns or insights
- **Class Imbalance:** Class imbalance occurs when the training data is not evenly distributed between classes, which can lead to biased machine learning models.

Preparation

Material	Description
Slides	Slides are about AI and class imbalance.

Introduction

First, students will learn about AI in this lesson. Next, they will learn the importance of creating fair machine learning models. This lesson will discuss class imbalance. Class imbalance occurs when the training data is not evenly distributed between classes, which can lead to biased machine learning models. In order for students to fully understand class imbalance, they will create their own machine learning model through Teachable Machine.

Instructions

Activity 1: Class Imbalance[45 minutes]
Instructions

AI explanation [10 minutes]	Explain to students about the difference between AI, data science, and machine learning
Machine Learning Process [5 minutes]	<ol style="list-style-type: none"> 1. Next, review the slides about the machine learning process. After, talk about how “Dr. Buolamwini introduces class imbalance in her research to reveal how gender classification algorithms recognize individuals with deep skin tones less frequently than those with fairer skin.”[1] . Classes are categories you want the computer to learn. Class imbalance occurs when the training data is not evenly distributed between classes, which can lead to biased machine learning models (5 minutes)
Teachable Machine [30 minutes]	<p>Instruct students that they will now make their own machine learning model using Teachable Machine(30 minutes). Students must navigate to this website: https://teachablemachine.withgoogle.com/train</p> <p>Students will use these instructions to navigate the Teachable Machine website.</p>

References:

[1] [Walker, R., Sherif, E., & Breazeal, C. \(2022\). Liberatory computing education for African American students. 2022 Conference on Research in Equitable and Sustained Participation in Engineering, Computing, and Technology \(RESPECT\), 85–89.](#)