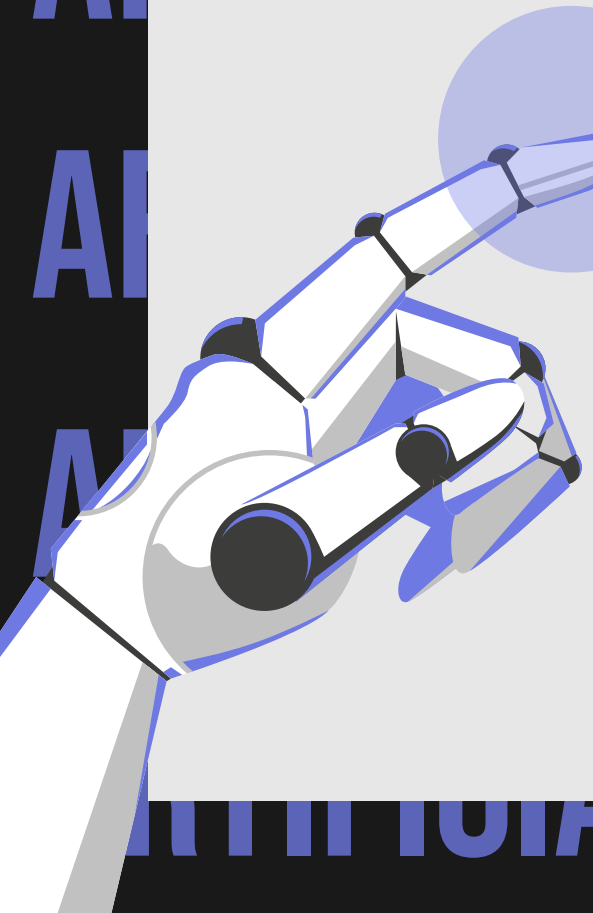

# AMIT AI & DS DIPLOMA PROJECT

## Analyzing Starbucks Beverages: Are Your Favorite Drinks Healthy?

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## UNDER THE SUPERVISION OF :

Eng. Abdalla

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ARTIFICIAL INTELLIGENCE (AI)

# 01.

# INTRO.

Analyzing Starbucks Beverages:
Are Your Favorite Drinks Healthy?

# MISSION STATEMENT

ARTIFI
INTELI
(AI)

This dataset is for Starbucks beverages
Targeting the knowledge of whether the beverage is healthy or not ！

# 02.

# PROBLEM DEFINITION

# WHAT PROBLEM ARE WE SOLVING?

Most people enjoy Starbucks drinks but ignore the nutrition label.
This project analyzes Starbucks beverage nutrition and classifies each as healthy or unhealthy.
Our goal is to help users make smarter choices

AR LLIGENCE (AI)
AR LLIGENCE (AI)

# 03.

# DATA COLLECTION

# WHERE DID WE GET THE DATA

## SOURCE

Source: **Kaggle – Starbucks Beverage Nutrition Dataset**

df

Python

| | Beverage_category | Beverage | Beverage_prep | Calories | Total Fat (g) | Trans Fat (g) | Saturated Fat (g) | Sodium (mg) | Total Carbohydrates (g) | Cholesterol (mg) | Dietary Fibre (g) | Sugars (g) | Protein (g) | Vitamin A (% DV) | Vitamin C (% DV) | Calcium (% DV) | Iron (% DV) | Caffeine (mg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | Coffee | Brewed Coffee | Short | 3 | 0.1 | 0.0 | 0.0 | 0 | 5 | 0 | 0 | 0 | 0.3 | 0% | 0% | 0% | 0% | 175 |
| 1 | Coffee | Brewed Coffee | Tall | 4 | 0.1 | 0.0 | 0.0 | 0 | 10 | 0 | 0 | 0 | 0.5 | 0% | 0% | 0% | 0% | 260 |
| 2 | Coffee | Brewed Coffee | Grande | 5 | 0.1 | 0.0 | 0.0 | 0 | 10 | 0 | 0 | 0 | 1.0 | 0% | 0% | 0% | 0% | 330 |
| 3 | Coffee | Brewed Coffee | Venti | 5 | 0.1 | 0.0 | 0.0 | 0 | 10 | 0 | 0 | 0 | 1.0 | 0% | 0% | 2% | 0% | 410 |
| 4 | Classic Espresso Drinks | Caffè Latte | Short Nonfat Milk | 70 | 0.1 | 0.1 | 0.0 | 5 | 75 | 10 | 0 | 9 | 6.0 | 10% | 0% | 20% | 0% | 75 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 236 | Frappuccino® Blended Crème | Strawberries & Crème (Without Whipped Cream) | Whole Milk | 350 | 6.0 | 3.0 | 0.2 | 15 | 260 | 70 | 0 | 68 | 6.0 | 8% | 8% | 20% | 4% | 0 |
| 238 | Frappuccino® Blended Crème | Vanilla Bean (Without Whipped Cream) | Tall Nonfat Milk | 170 | 0.1 | 0.1 | 0.0 | 0 | 160 | 39 | 0 | 38 | 4.0 | 6% | 0% | 10% | 0% | 0 |
| 239 | Frappuccino® Blended Crème | Vanilla Bean (Without Whipped Cream) | Whole Milk | 200 | 3.5 | 2.0 | 0.1 | 10 | 160 | 39 | 0 | 38 | 3.0 | 6% | 0% | 10% | 0% | 0 |
| 240 | Frappuccino® | Vanilla Bean (Without | Soymilk | 180 | 1.5 | 0.2 | 0.0 | 0 | 160 | 37 | 1 | 35 | 3.0 | 4% | 0% | 10% | 6% | 0 |

# 04.

# DATA WRANGLING

# DATA CLEANING IS

## PROBLEM

Having unrelated columns
Duplicated data
Missing values

Drop the unrelated columns
Drop Duplicated data
Handling Missing values

## SOLUTION

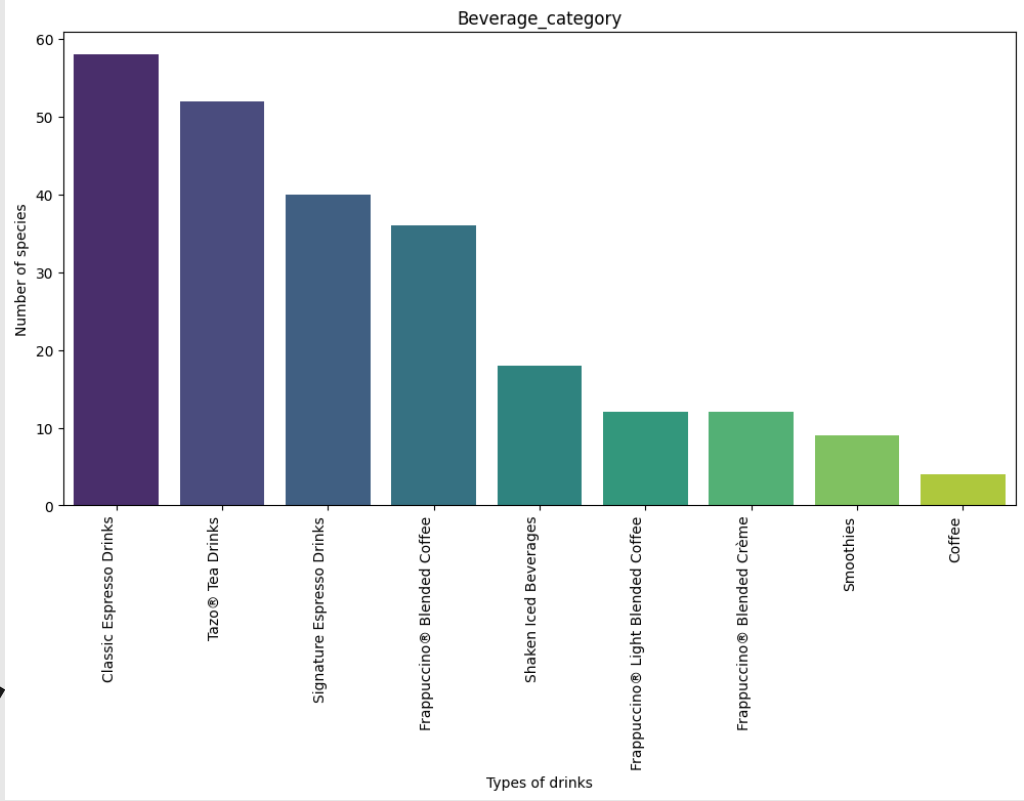
# ARTIFICIAL INTELLIGENCE (AI)

# 05.

# DATA ANALYSIS & VISUALIZATION

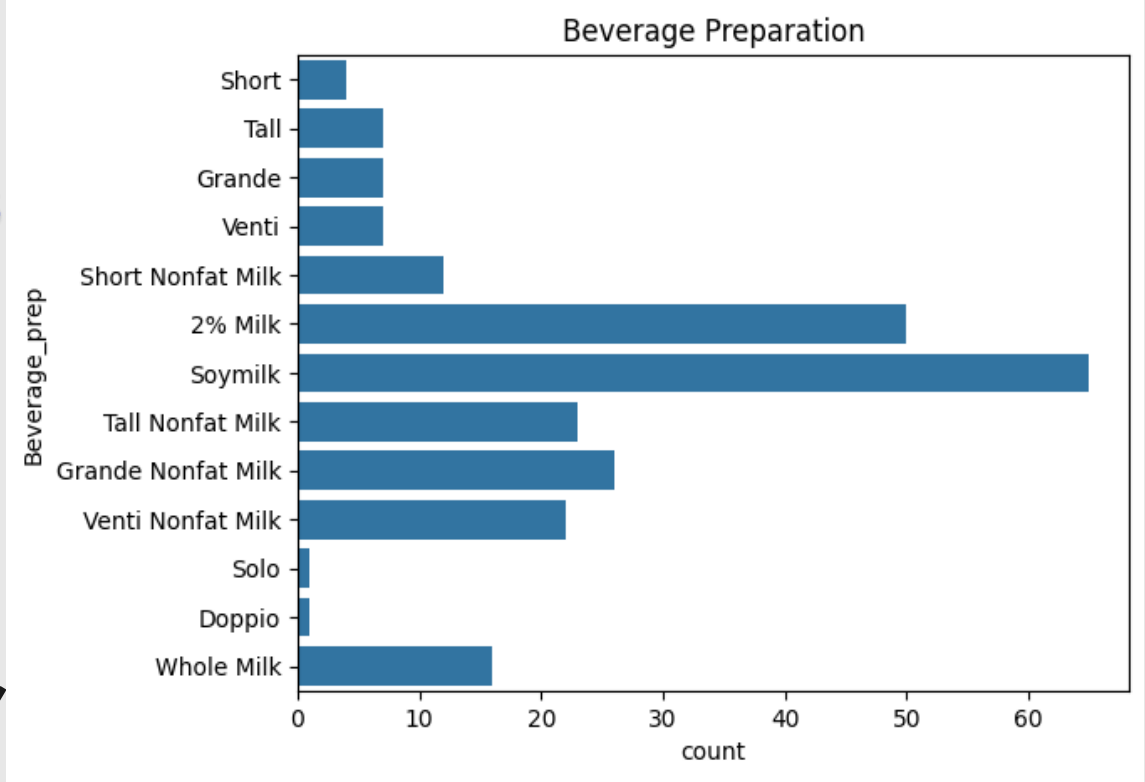
# DATA VISUALIZATION

This barchart is Describing the beverage category



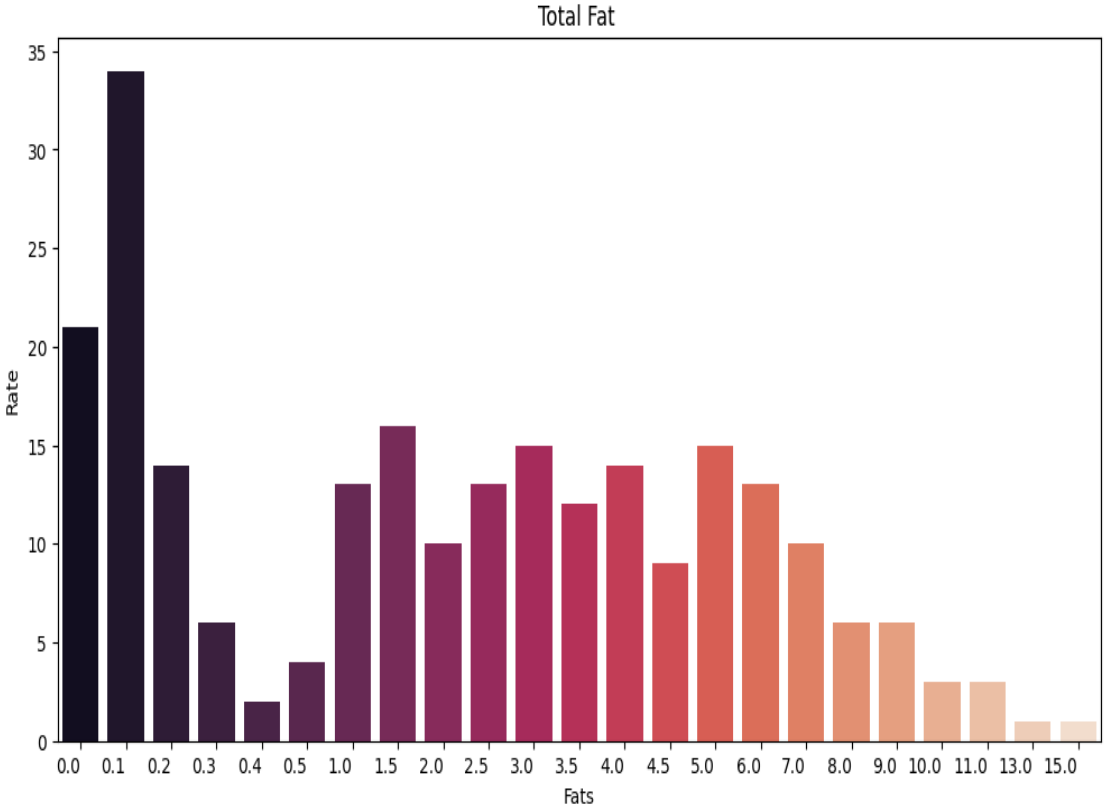
# DATA VISUALIZATION

This chart is Describing the beverage Preparation



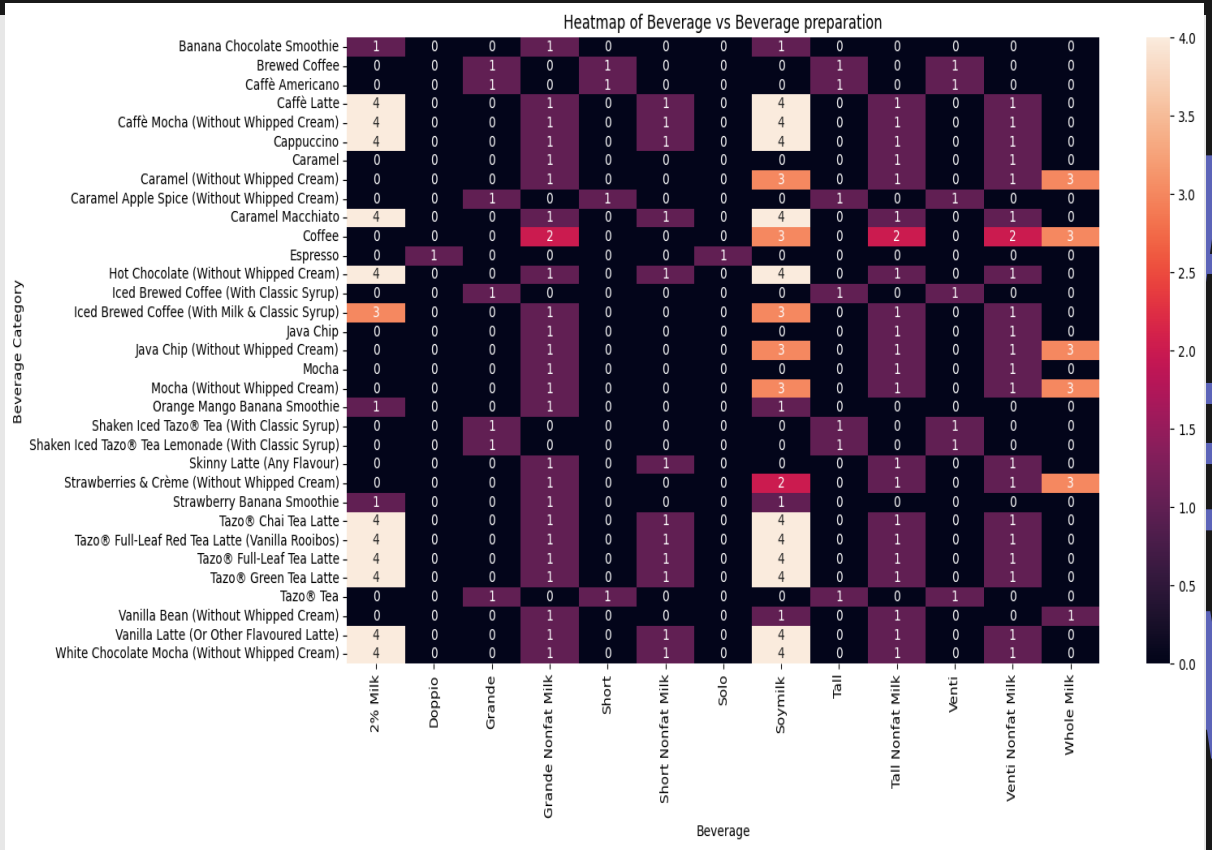
# DATA VISUALIZATION

This barchart is Describing the Total fat category



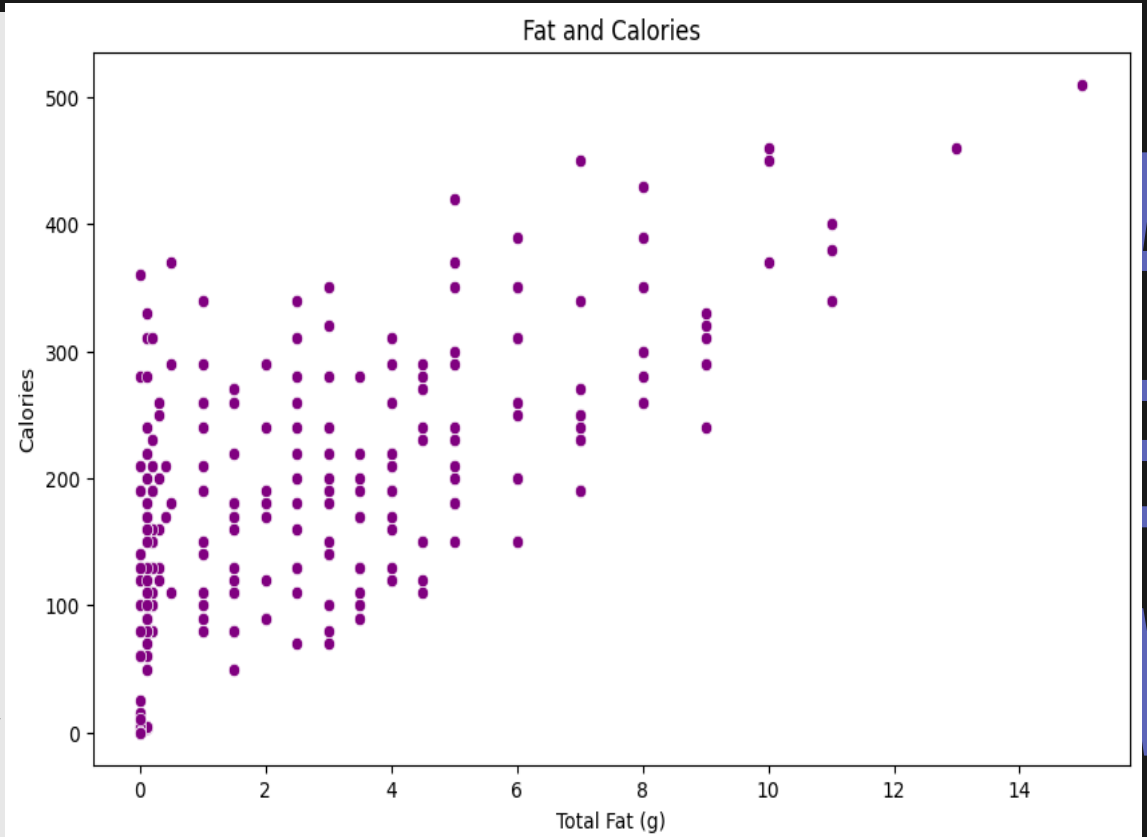
# DATA VISUALIZATION

This Heatmap Is describing Beverage category



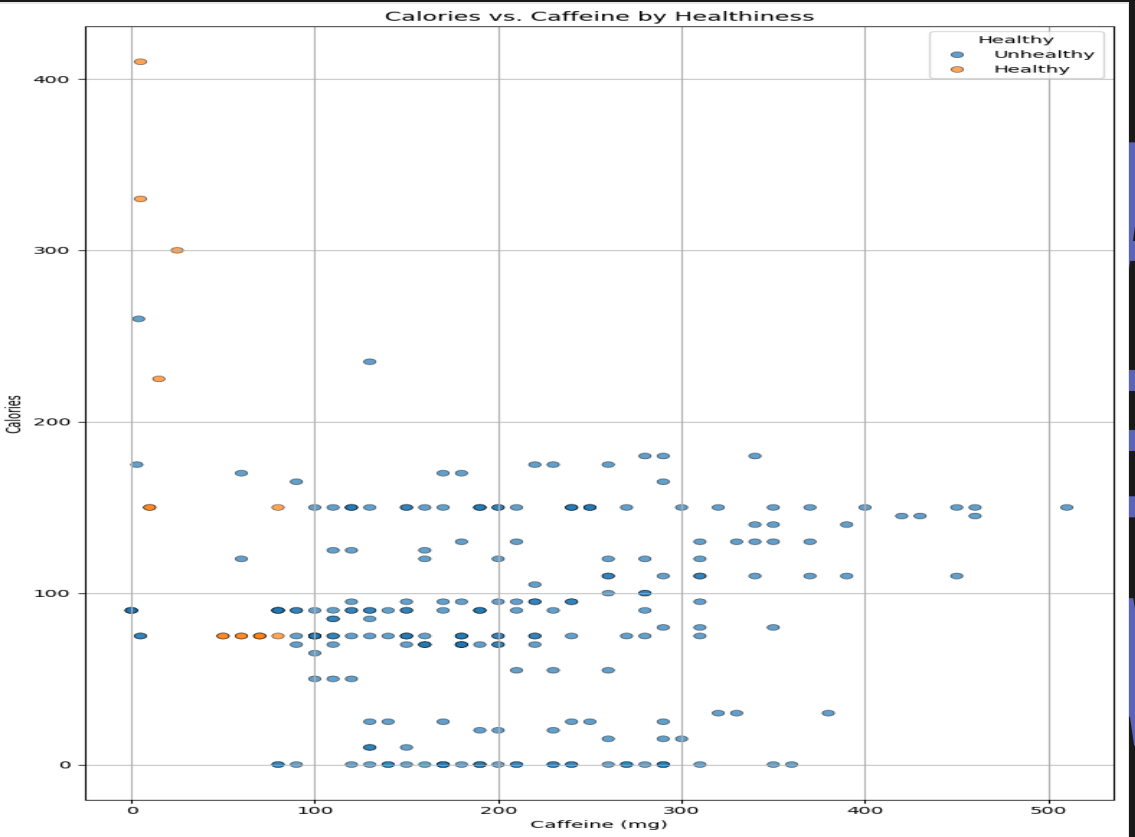
# DATA VISUALIZATION

This Scatter plot Is to describe The total fats & cals.



# DATA VISUALIZATION

This Chart shows Whether the Beverage is Healthy or Not ?



# 0.6 DATA PREPROCESSING..

- **Define feature X and target Y**
- **Encoded categorical features** (like drink type)
- **Scaled numerical values**
  (e.g., height 175 cm → 1.75 m)
- **Balanced dataset** (to fix class imbalance)
- **Split data** into 80% training and 20% testing sets

/[AI]

## 🎯 Goal:

Prepare the data for accurate and fair modeling.

# 0.7

# MODEL TRAINING & TESTING

```
accuracy= 0.9591836734693877

Classification Report:
              precision    recall  f1-score   support

           0       0.00      0.00      0.00         0
           1       1.00      0.96      0.98        49

    accuracy                           0.96        49
   macro avg       0.50      0.48      0.49        49
weighted avg       1.00      0.96      0.98        49


Confusion Matrix:
 [[ 0  0]
 [ 2 47]]

precision_score: 0.5
```

LOGISTIC REGRESSION

```
accuracy= 0.9591836734693877

Classification Report:
              precision    recall  f1-score   support

           0       0.00      0.00      0.00         0
           1       1.00      0.96      0.98        49

    accuracy                           0.96        49
   macro avg       0.50      0.48      0.49        49
weighted avg       1.00      0.96      0.98        49


Confusion Matrix:
 [[ 0  0]
 [ 2 47]]

precision_score: 0.5
```

SVC

```
accuracy= 0.9591836734693877

Classification Report:
              precision    recall  f1-score   support

           0       0.00      0.00      0.00         0
           1       1.00      0.96      0.98        49

    accuracy                           0.96        49
   macro avg       0.50      0.48      0.49        49
weighted avg       1.00      0.96      0.98        49


Confusion Matrix:
 [[ 0  0]
 [ 2 47]]

precision_score: 0.5
```

LINEAR SVC

```
accuracy= 0.9387755102040817

Classification Report:
              precision    recall  f1-score   support

           0       0.00      0.00      0.00         0
           1       1.00      0.94      0.97        49

    accuracy                           0.94        49
   macro avg       0.50      0.47      0.48        49
weighted avg       1.00      0.94      0.97        49


Confusion Matrix:
 [[ 0  0]
 [ 3 46]]

precision_score: 0.5
```

KNN

```
accuracy= 1.0

Classification Report:
              precision    recall  f1-score   support

           1       1.00      1.00      1.00        49

    accuracy                           1.00        49
   macro avg       1.00      1.00      1.00        49
weighted avg       1.00      1.00      1.00        49


Confusion Matrix:
 [[49]]

precision_score: 1.0
```

DECISION TREE CLASSIFIER

```
accuracy= 1.0

Classification Report:
              precision    recall  f1-score   support

           1       1.00      1.00      1.00        49

    accuracy                           1.00        49
   macro avg       1.00      1.00      1.00        49
weighted avg       1.00      1.00      1.00        49


Confusion Matrix:
 [[49]]

precision_score: 1.0
```

BAGGING CLASSIFIER

```
accuracy= 0.9795918367346939

Classification Report:
              precision    recall  f1-score   support

           0       0.00      0.00      0.00         0
           1       1.00      0.98      0.99        49

    accuracy                           0.98        49
   macro avg       0.50      0.49      0.49        49
weighted avg       1.00      0.98      0.99        49


Confusion Matrix:
 [[ 0  0]
 [ 1 48]]

precision_score: 0.5
```

RANDOM FOREST CLASSIFIER

```
accuracy= 0.9795918367346939

Classification Report:
              precision    recall  f1-score   support

           0       0.00      0.00      0.00         0
           1       1.00      0.98      0.99        49

    accuracy                           0.98        49
   macro avg       0.50      0.49      0.49        49
weighted avg       1.00      0.98      0.99        49


Confusion Matrix:
 [[ 0  0]
 [ 1 48]]

precision_score: 0.5
```

EXTRA TREES CLASSIFIER

```
accuracy= 1.0

Classification Report:
              precision    recall  f1-score   support

           1       1.00      1.00      1.00        49

    accuracy                           1.00        49
   macro avg       1.00      1.00      1.00        49
weighted avg       1.00      1.00      1.00        49


Confusion Matrix:
 [[49]]

precision_score: 1.0
```

## VOTING CLASSIFIER

ARTI
CIAL
INTE
IGEN
(AI)

```
accuracy= 1.0

Classification Report:
              precision    recall  f1-score   support

           1       1.00      1.00      1.00        49

    accuracy                           1.00        49
   macro avg       1.00      1.00      1.00        49
weighted avg       1.00      1.00      1.00        49


Confusion Matrix:
 [[49]]

precision_score: 1.0
```

STACKING CLASSIFIER

```
accuracy= 0.9795918367346939

Classification Report:
              precision    recall  f1-score   support

           0       0.00      0.00      0.00         0
           1       1.00      0.98      0.99        49

    accuracy                           0.98        49
   macro avg       0.50      0.49      0.49        49
weighted avg       1.00      0.98      0.99        49


Confusion Matrix:
 [[ 0  0]
 [ 1 48]]

precision_score: 0.5
```

XGB CLASSIFIER

```
accuracy= 1.0

Classification Report:
              precision    recall  f1-score   support

           1       1.00      1.00      1.00        49

    accuracy                           1.00        49
   macro avg       1.00      1.00      1.00        49
weighted avg       1.00      1.00      1.00        49


Confusion Matrix:
 [[49]]
```

CATBOOST CLASSIFIER

```
accuracy= 0.9591836734693877

Classification Report:
              precision    recall  f1-score   support

           0       0.00      0.00      0.00         0
           1       1.00      0.96      0.98        49

    accuracy                           0.96        49
   macro avg       0.50      0.48      0.49        49
weighted avg       1.00      0.96      0.98        49


Confusion Matrix:
 [[ 0  0]
 [ 2 47]]

precision_score: 0.5
```

LGBM CLASSIFIER

ARTIFI
INTELI
(AI)

# THANK YOU ☺!

<<<<