

4483 CAPSTONE PROJECT PRESENTATION

Body Fat Prediction

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Group: Wednesday, 16:30

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Introduction

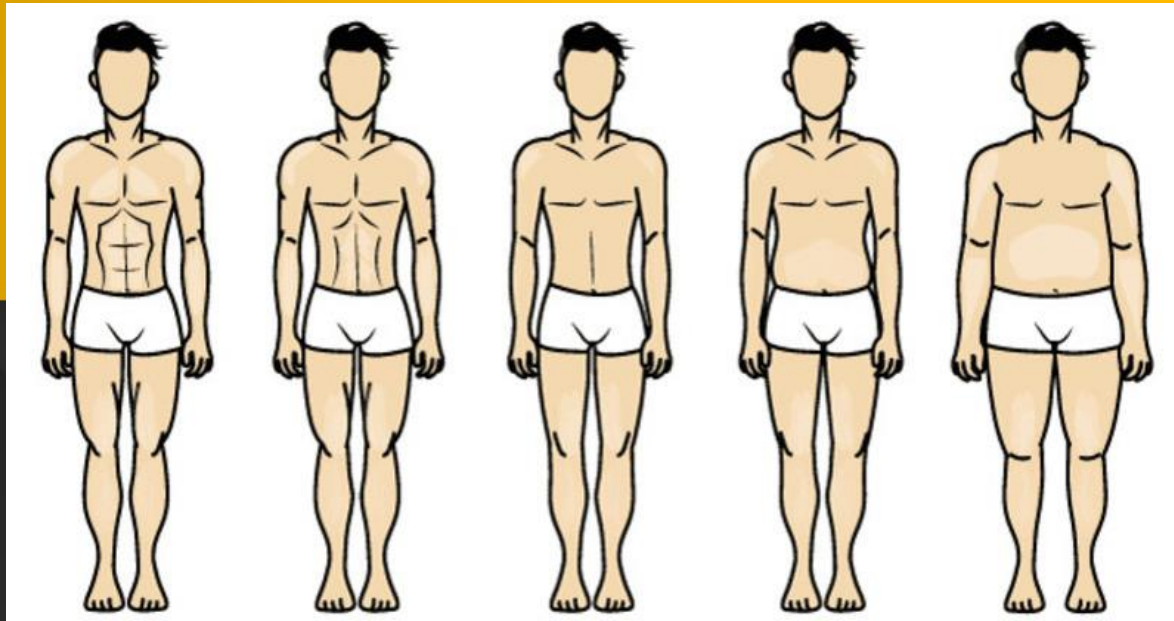
- What is body fat?
- Do we need body fat?
- How to measure body fat percentage?
- How much?

HEALTHY BODY FAT PERCENTAGE FOR MEN AND WOMEN

Age	Body Fat Percentage for Men	Body Fat Percentage for Women
20-39	8%-19%	21%-32%
40-59	11%-21%	23%-33%
60-79	13%-24%	24%-35%

Source: American Journal of Clinical Nutrition

Body Fat Dataset



What Dataset for Prediction?

- A list of **e%** of body fat
- 252 men
- Various ages, weights, and body circumference data
- 15 variables + 1
- 4 categories

Dataset characteristic consists of

- Body density
- Body fat % (Siri equation)
- Age
- Age group
- A list of body measurements of
 - Weight (lbs)
 - Height (inches)
 - Circumference for Neck, Chest, Abdomen, Hip, Thigh, Knee, Ankle, Biceps, forearm, wrist)

Exploratory Data Analysis

#Data Columns

```
Index(['AgeGroup', 'Density', 'BodyFat', 'Age', 'Weight', 'Height', 'Neck', 'Chest', 'Abdomen', 'Hip', 'Thigh', 'Knee', 'Ankle', 'Biceps', 'Forearm', 'Wrist'], dtype='object')
```

#Data Null

None

#Data Shape

(252, 16)

#Data Duplicate

None

#Data Info

Float64(14)

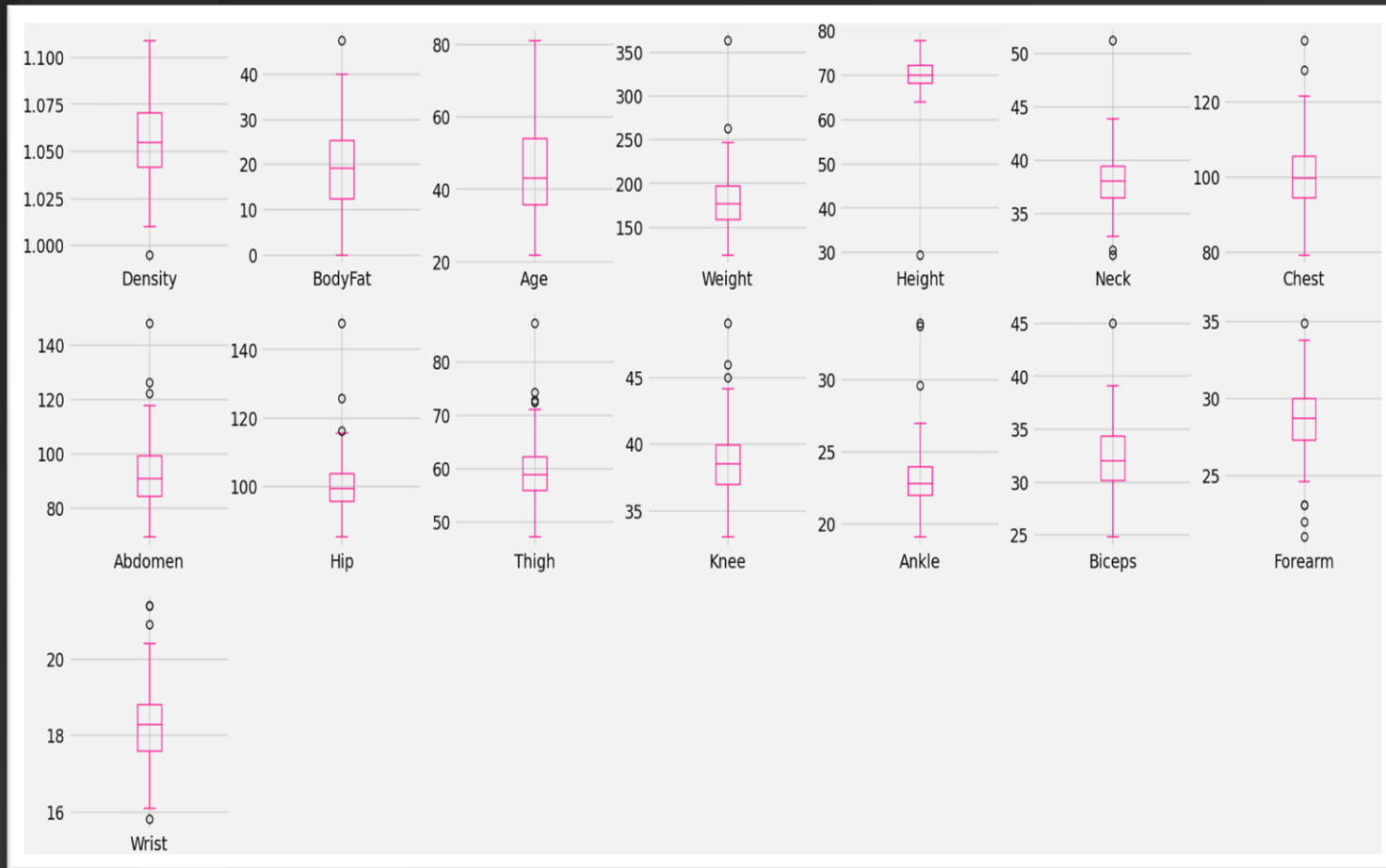
Int64(1)

Object(1)

#Data uniqueness(H&L)

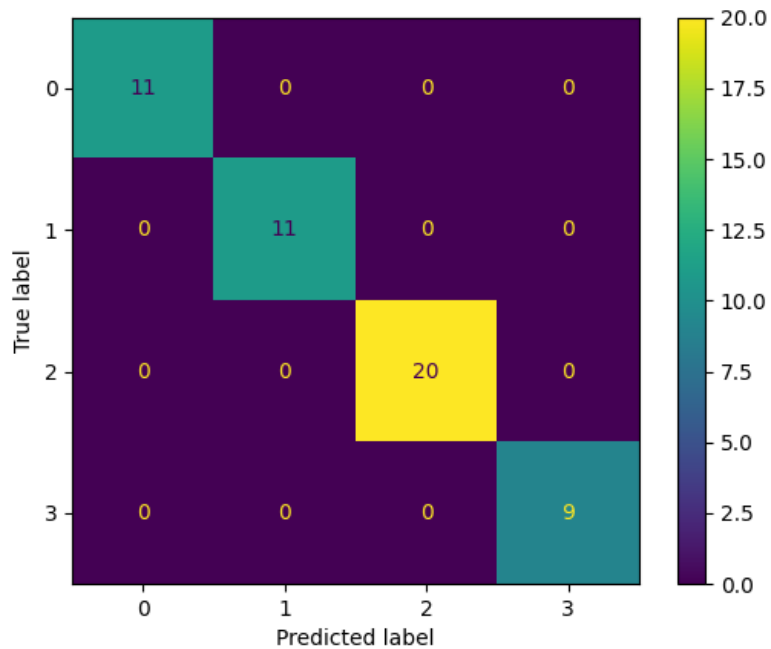
Density(218)

Wrist(44)



Predictive Data Analysis

Confusion Matrix

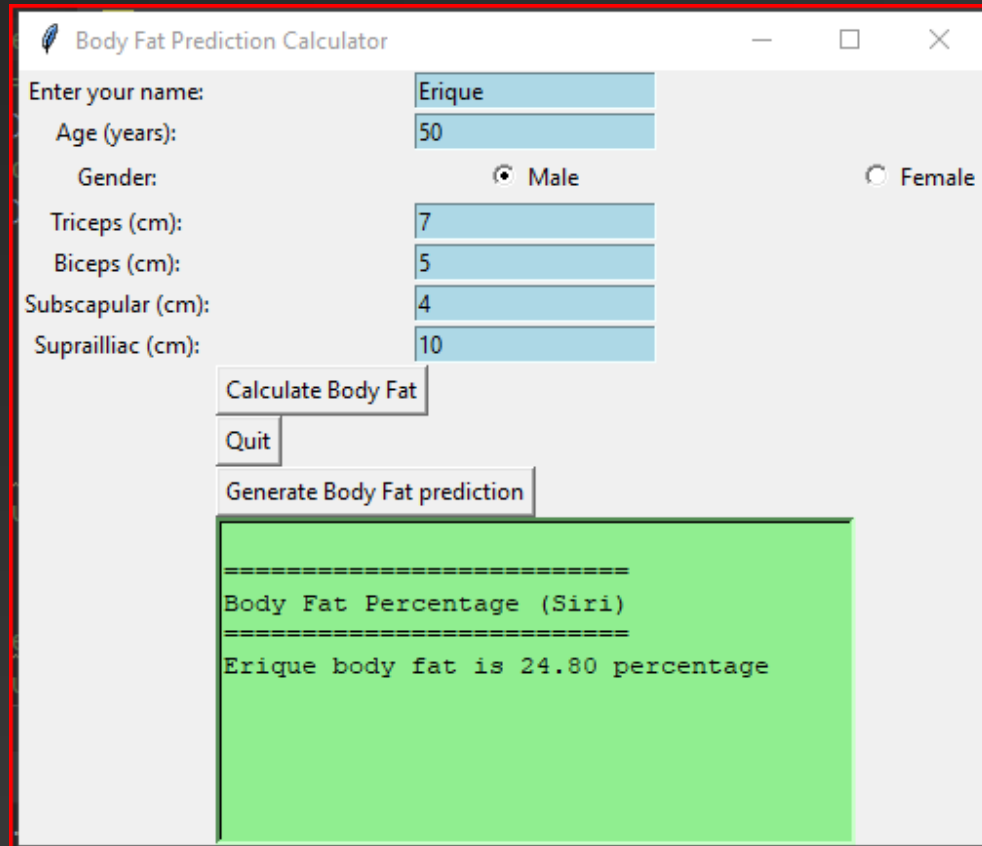


Classification Report

Class	Precision	Recall	F1-Score	Support
0	1.0	1.0	1.0	21
1	1.0	1.0	1.0	16
2	1.0	1.0	1.0	24
3	1.0	1.0	1.0	15
Accuracy			1.0	76
~ Macro	1.0	1.0	1.0	76
~ Weight	1.0	1.0	1.0	76

TkInter (Python) Implementation and Deployment Status

- Installed Healthy Lifestyles package v0.1.1 (GitHub)
- 6 variables as Input
- Result value is body density in float
- Body Fat % prediction is Siri method.



The screenshot shows a Tkinter application window titled "Body Fat Prediction Calculator". It features a light gray background with a white title bar. The window contains several input fields for user data, a gender selection section, and three buttons. The input fields are labeled "Enter your name:", "Age (years):", "Triceps (cm):", "Biceps (cm):", "Subscapular (cm):", and "Suprailliac (cm):". The gender section has two radio buttons labeled "Male" and "Female", with "Male" selected. The buttons are "Calculate Body Fat", "Quit", and "Generate Body Fat prediction". A green rectangular area at the bottom displays the output: "=====
Body Fat Percentage (Siri)
=====
Erique body fat is 24.80 percentage".

Input Field	Value
Enter your name:	Erique
Age (years):	50
Gender:	Male
Triceps (cm):	7
Biceps (cm):	5
Subscapular (cm):	4
Suprailliac (cm):	10

Buttons: Calculate Body Fat, Quit, Generate Body Fat prediction

Output:
=====
Body Fat Percentage (Siri)
=====
Erique body fat is 24.80 percentage

References

1. “Body Fat Prediction Dataset,” [www.kaggle.com](https://www.kaggle.com/datasets/fedesoriano/body-fat-prediction-dataset).
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2. “Quick Start — Fitness Tools 0.1.1 documentation,” [fitness-tools.readthedocs.io](https://fitness-tools.readthedocs.io/en/latest/quickstart.html).
<https://fitness-tools.readthedocs.io/en/latest/quickstart.html> (accessed May 02, 2023).
3. “Run Data Science & Machine Learning Code Online | Kaggle,” [www.kaggle.com](https://www.kaggle.com/code/).
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End of presentation

Thank You