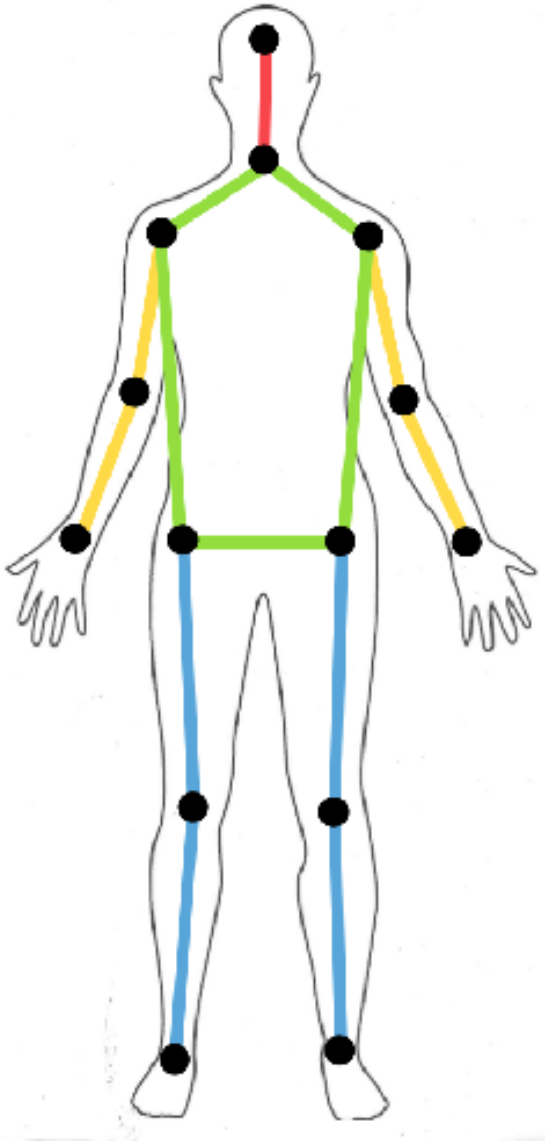
Gender & Personal Identification



- Hisham Madcor
- Prof. Walid Gomaa

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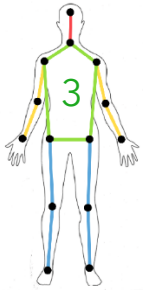
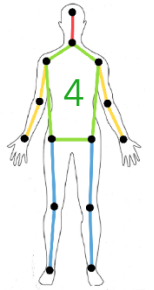


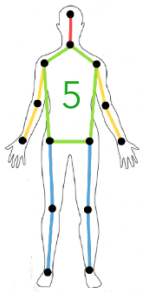
Introduction

- The aim of this project is to create a new dataset that has synchronization between the IMU unit's data and visualization data.
- This Apporaoch will lead the ML models to a better understanding of the Human gaits and to a better prediction to them.
- By this data we could mimik the movement of the Humans.

Data Set



- 45 subjects (32 mlaes, 13 females)
- 3 IMU units and One Apple Watch (4 Sensors)
- Videos 1080P with 30 FPS from (90- and 60-degree angles)



Data processing

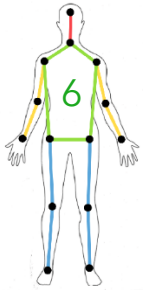
1. Cut the videos of the Subjects into gait cycles.
2. Convert them into GEis

In the Gender recognititon case:

1. put each GEI and its label in one array, the Male takes 1, the female takes 0.
2. Cut the excesses around the subjects.
3. Fix the size of all the images.

In the Person Identification case:

1. Take every GEI of each subject, put it in an array with the label of this subject.
2. Cut the excesses around the subjects.
3. Fix the size of all the images.

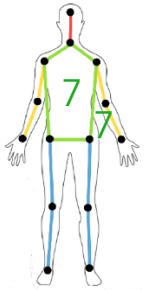


Data processing

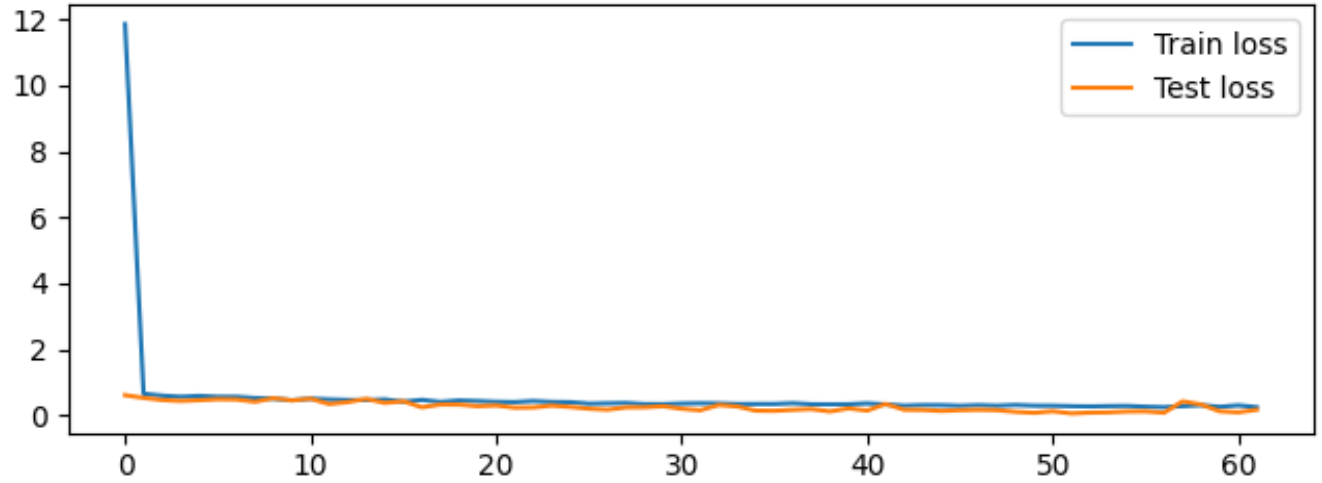
3. Then I take all the arrays resulted, divide them into thre sets:
    - Training set
    - Validation set
    - Testing set

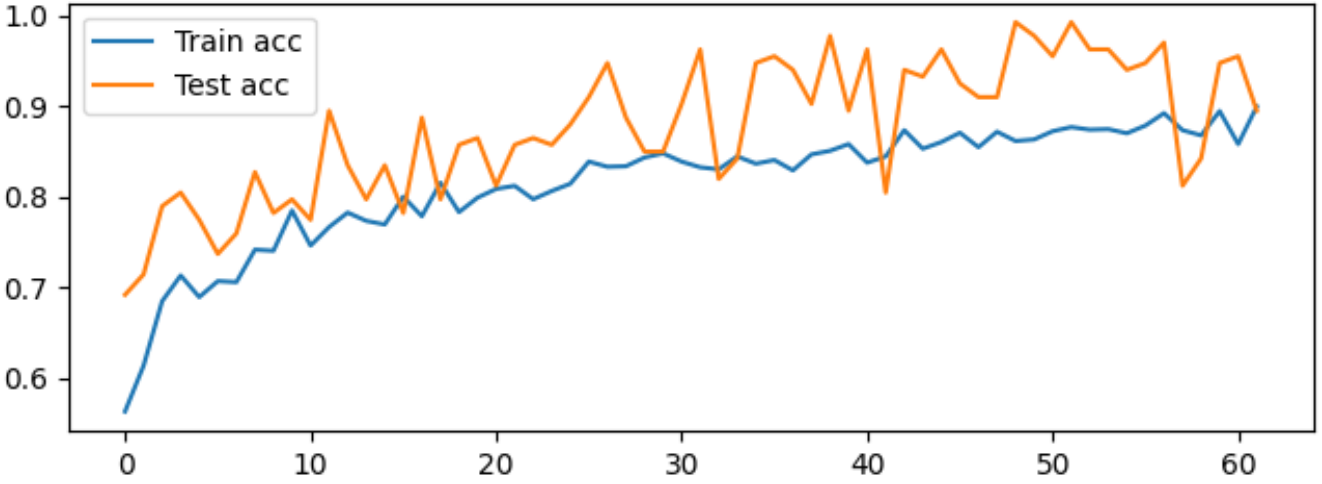
    # the validation set does not enter the model; I use it for testing the model after finishing and saving its weights.

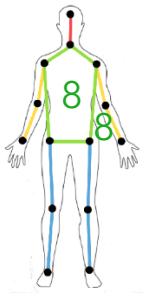
Gender Recogntion



Train: 95.9%
Test: 99.2%
Model validation(acc): 93.00%

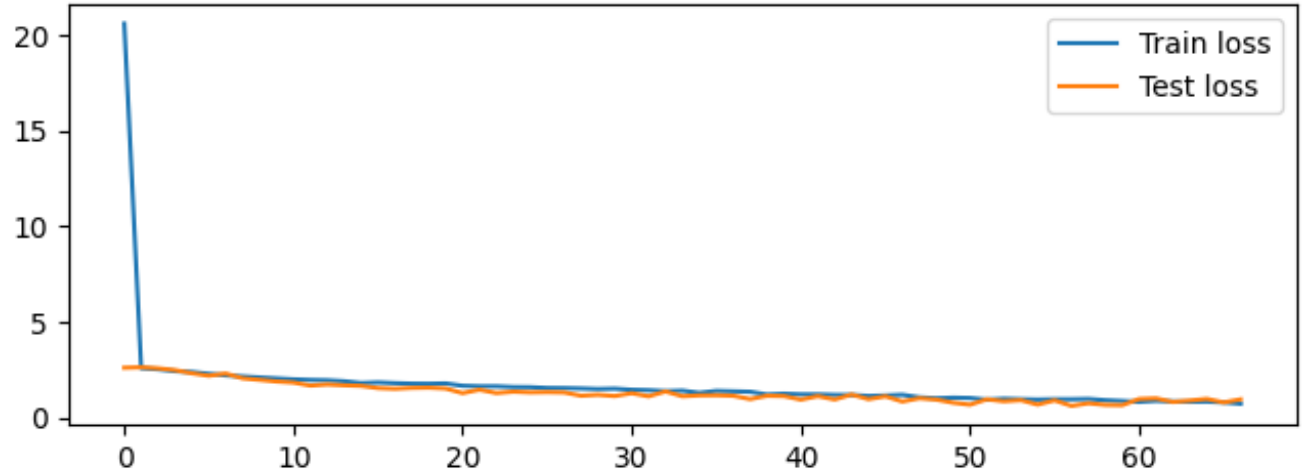


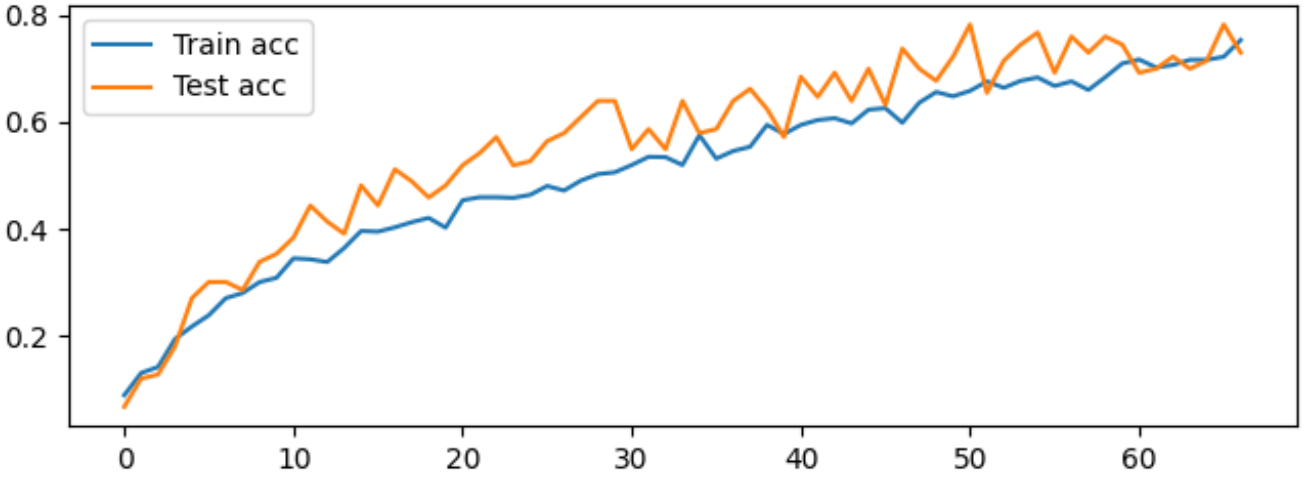


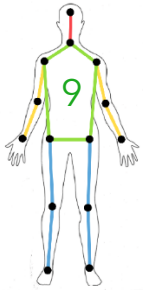


Personal Identification

Train: 0.861
Test: 0.782
Model validation(acc): 80.00%

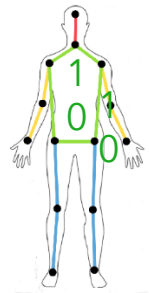






Future Work

- We will continue the sechronization of the data.
- There are some subjects needed to be repeated
- Try to collect more data to reach 90 subjects.



Acknologements

- I want to thank Eng. Osama for his help
- I want to thank Ahmed Elnagar, Yasser Rohaim, Menna Osman And Mennatullah for their termendous work and help.