# Fitness Tracker

Group: Make Mae Great Again

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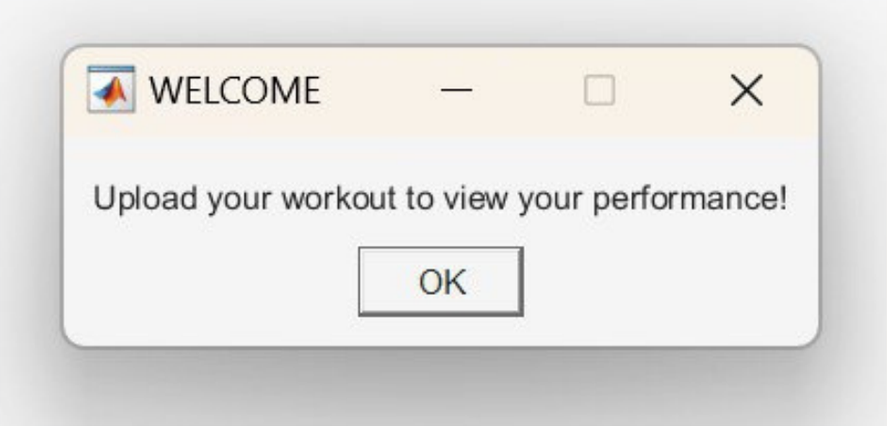
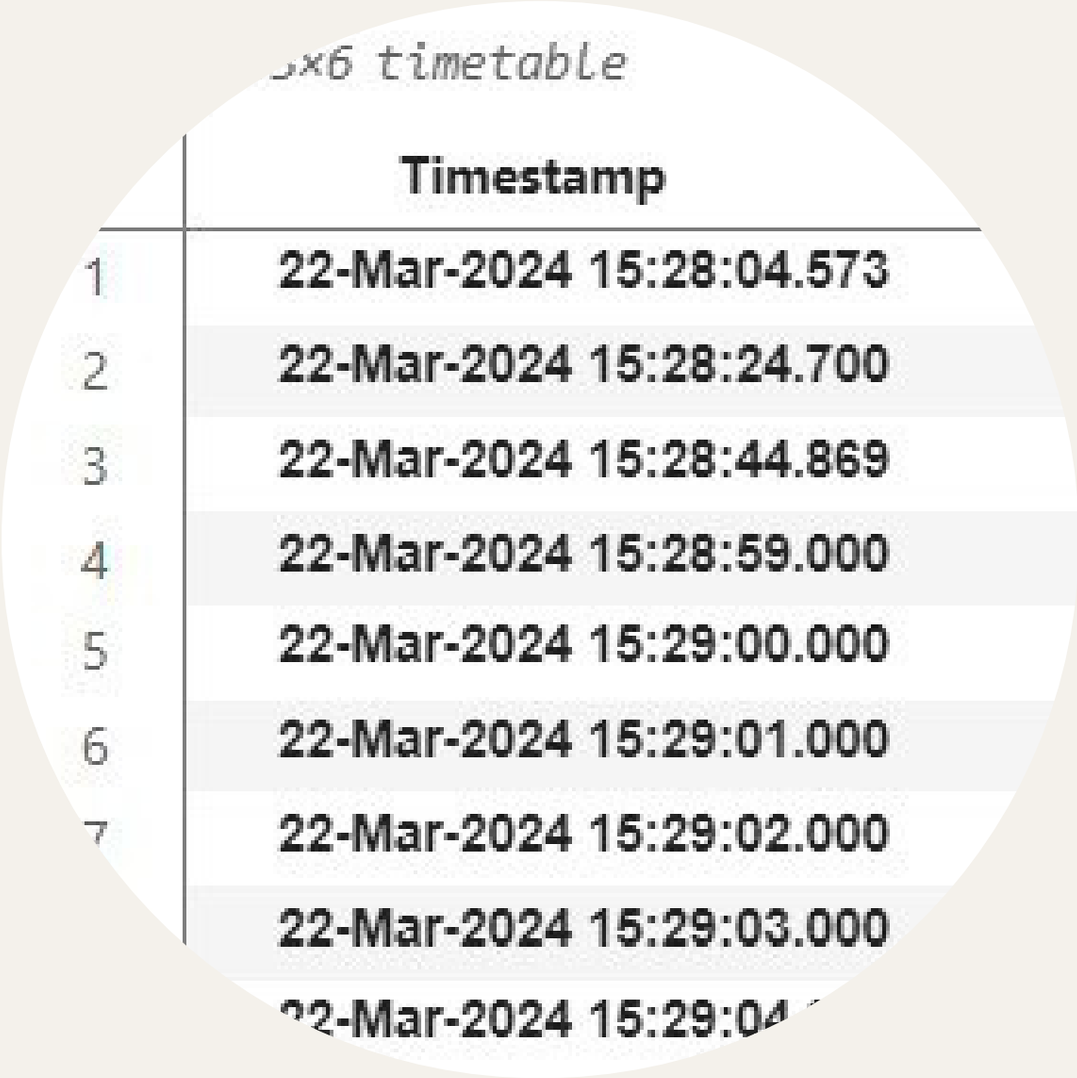
# Project Summary

Data from the MATLAB mobile tracker is recorded, extracted, cleaned and studied. Analyses and machine learning are then conducted on the data to provide a better understanding and visualisation of information. Additional data such as moving speed and calories burnt are then derived using the necessary data.



```
distance = 658.7000
time = 369
averageSpeed = 1.8000
```


**1** BASIC DATA INFORMATION

*Preliminary Data Calculation*

Initial calculations are made to give an overview of the exercise, including distance travelled, time taken and average speed

```
workout = "ExampleData.mat"
load(workout)
```

**2** **MACHINE LEARNING**

*Prediction of motion*

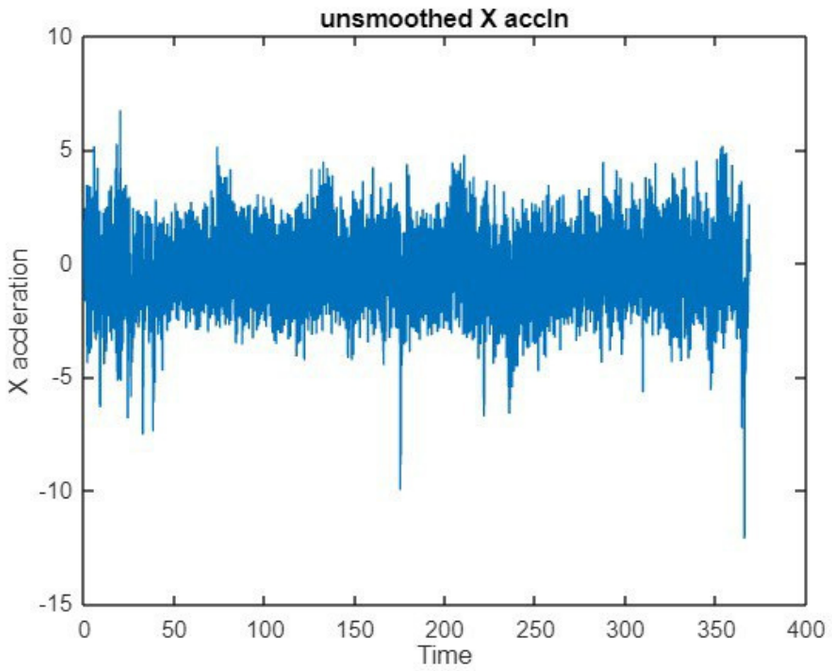
Machine learning is used to predict the motion of a person. The motion is classified into 3 categories, ‘sitting’, ‘walking’, ‘running’.

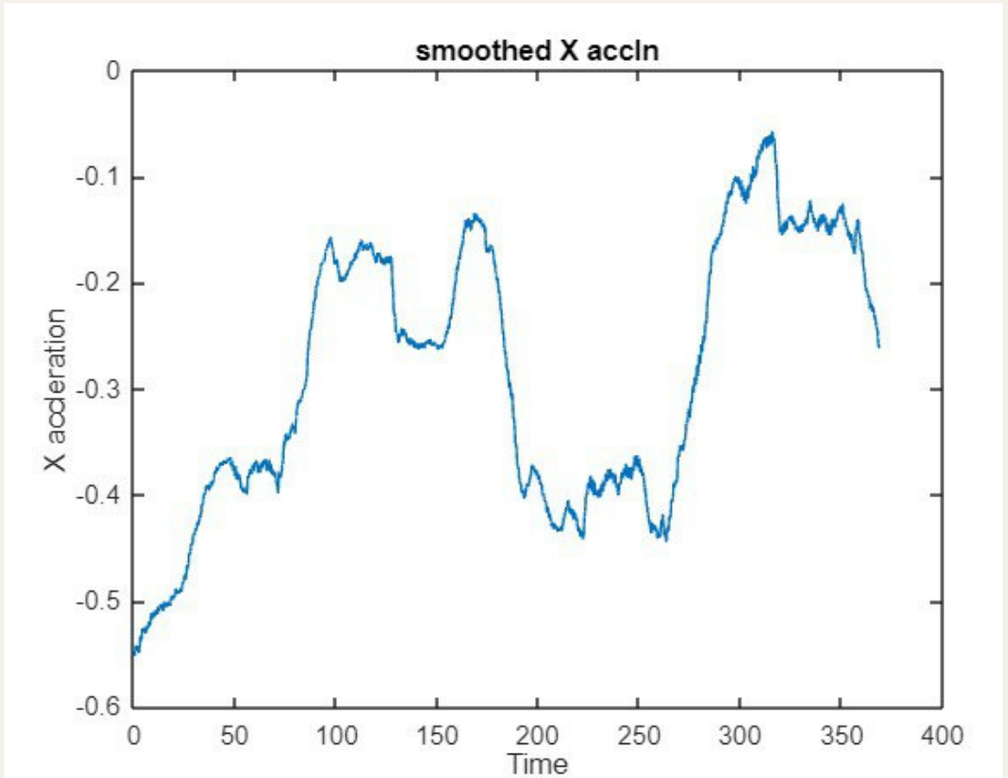
## 3 DATA VISUALISATION

*Acceleration*

The instantaneous acceleration is visualised into a plot against time. The graph is then smoothed for clearer understanding. Although it is accurate in presenting the overall trend, the numeric value on the y-axis is scaled down as well, making this a limitation

```
The total distance traveled is: 0.4093 miles
You took 864.4416 steps
```

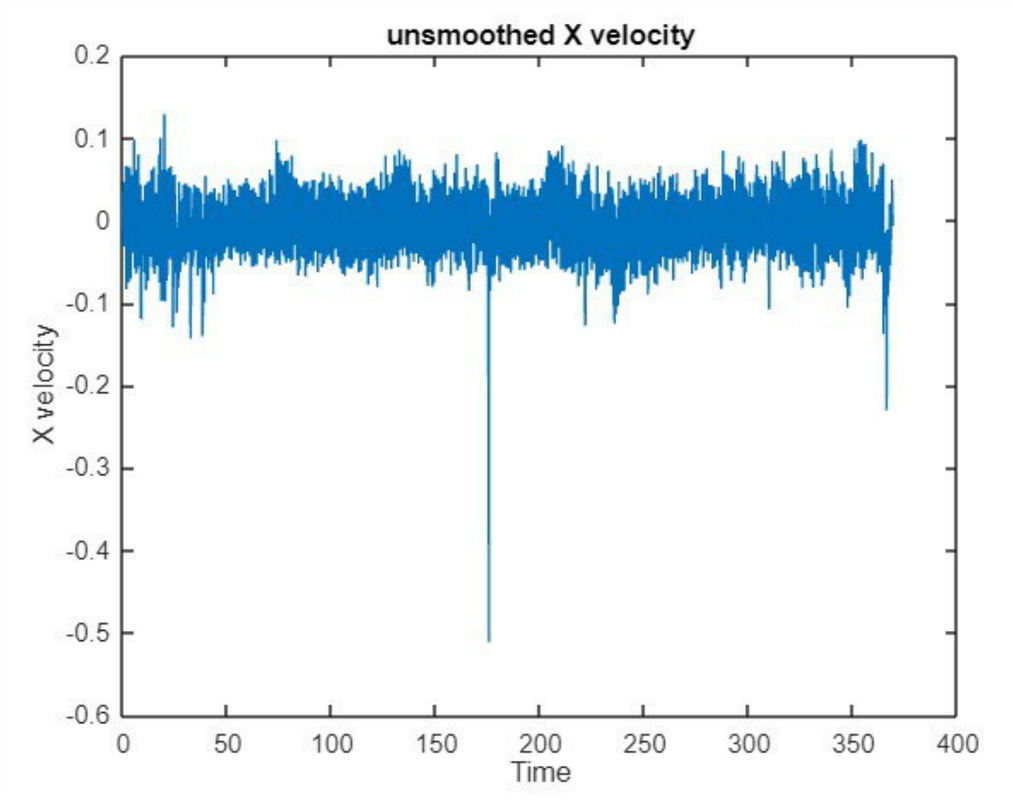


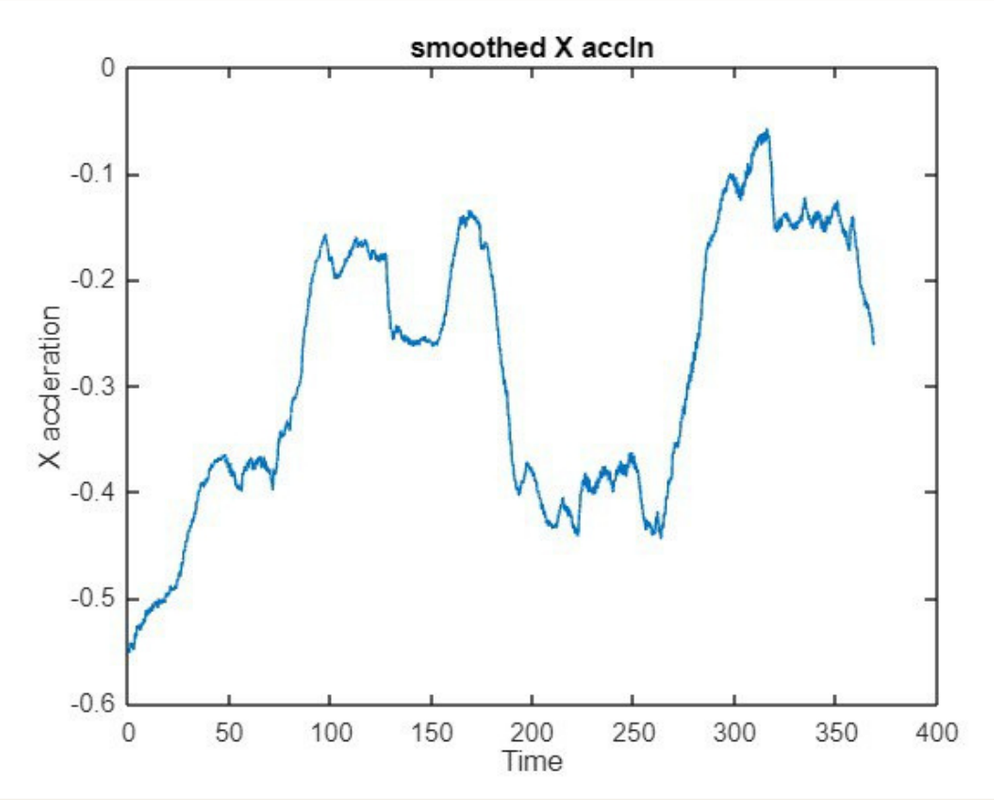



## 4 DATA VISUALISATION

*Velocity*

Velocity is calculated using Riemann sum method of integration using instantaneous acceleration and time data. A similar smoothing process is also carried out.



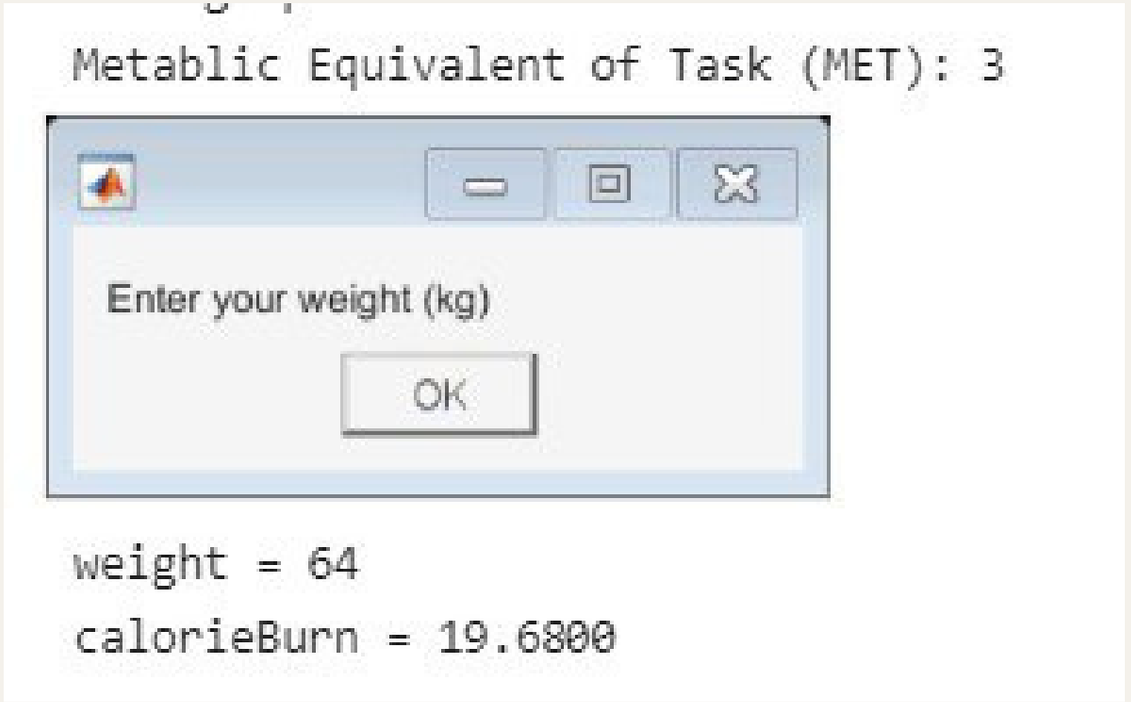



**5** CALORIES DATA

*Calculation of calories burnt*

The code also calculates the amount of calories burnt based on weight data input by the user.

```
msgbox("Enter your weight (kg)")
weight =   64
```



## 6 POSITION MAP

*Exercise path generated*

Lastly, a position map is generated based on the coordinates recorded. It is then visualised.