

## Step Counter

You are going to implement a step counter in MATLAB (or in any language you want). Your software should work offline on the collected accelerometer data from your smart-phone.

### Algorithm:

You are going to implement the following steps:

- Sample 3-axis accelerometer data from your smart-phone
  - What should be the minimum sampling rate?
  - Get several traces while you are walking.
- Convert 3-axis signal into 1-axis magnitude signal.
- One axis data will be given to your software which will count the steps taken.
- Filter out the noise from your data.
  - What are the sources of noise?
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  - Use frequency domain filtering
- Detect the step by considering several approaches.
  - Count peaks
  - Or consider negative to positive transitions
  - Or any other smart algorithms?

## Deliverables

### Your source code together with:

3-axis accelerometer samples data file  
1-axis accelerometer samples data file  
Plot of your 1-axis accelerometer data  
Plot of your filtered 1-axis accelerometer data