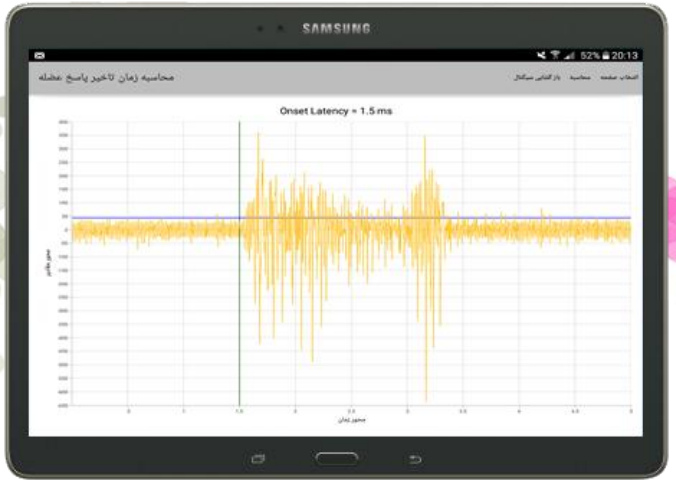


Designing and implementing an Android Operating System based- EMG Software for estimating Muscle Onset Latency

Team Members : M.Karimpour, Dr R.Sharifian, Dr H.Parsaei, Dr Z.Rojhani Shirazi, Dr F.Yazdani

What's mHealth

Physiological Monitoring

- is the practice of using sensors to read, store, process and interpret physiological data from organic beings, including biofeedback signals associated with heart, brain, muscle and other organ activity.
- Physiological monitoring can provide a plethora of useful health, fitness and other related data in real-time

Kinds of Physiological Data

- Electrocardiogram (ECG)
- Electroencephalography (EEG)
- Electromyography (EMG)
- and …

Useful measures of Physiological Monitoring

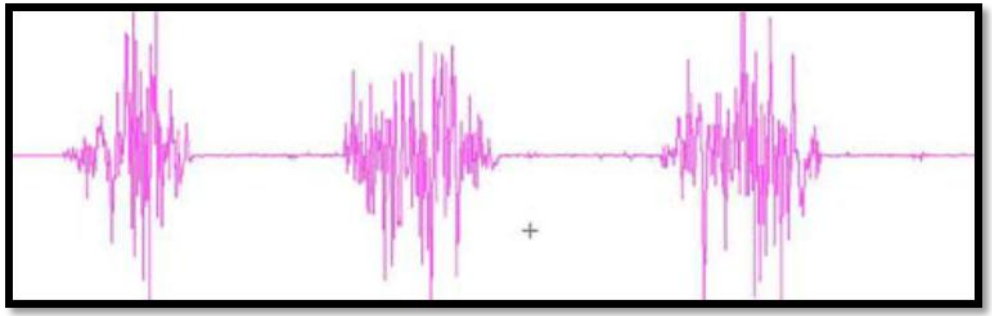
- Pulse
- Respiration Rate
- Blood Oxygen Levels
- **Muscle Onset Latency**
- Muscle Fatigue
- and …

Applications of Onset Latency Assessment

- Carpal Tunnel Syndrome
- Neuropathy
- Neuromuscular Junction Disorders
- Motor neuron disease
- and …

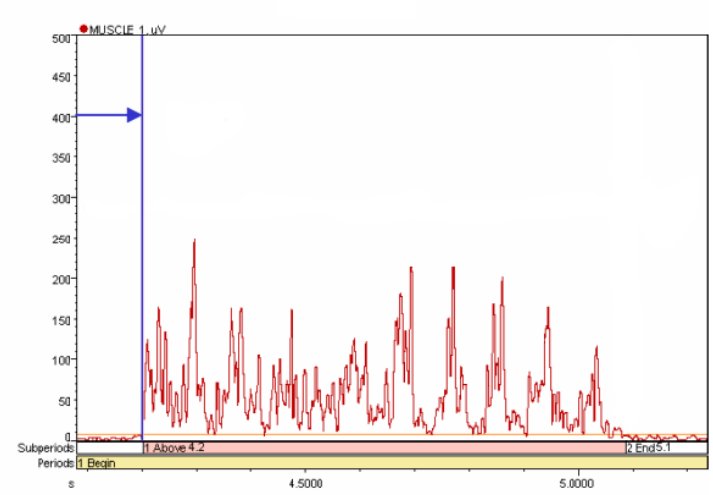
Electromyography (EMG)

Electromyography (EMG) is an electrodiagnostic medicine technique for evaluating and recording the electrical activit y produced by skeletal muscles.

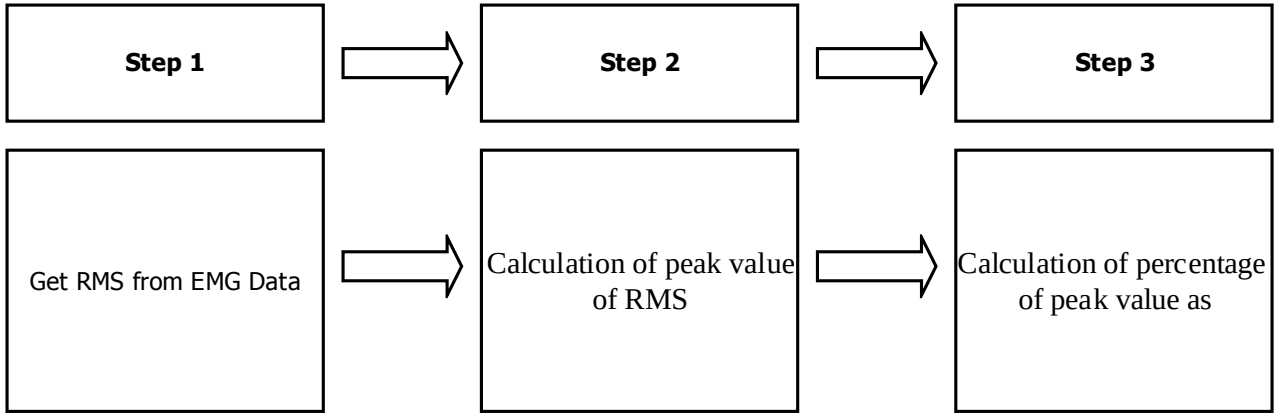


Muscle Onset Latency

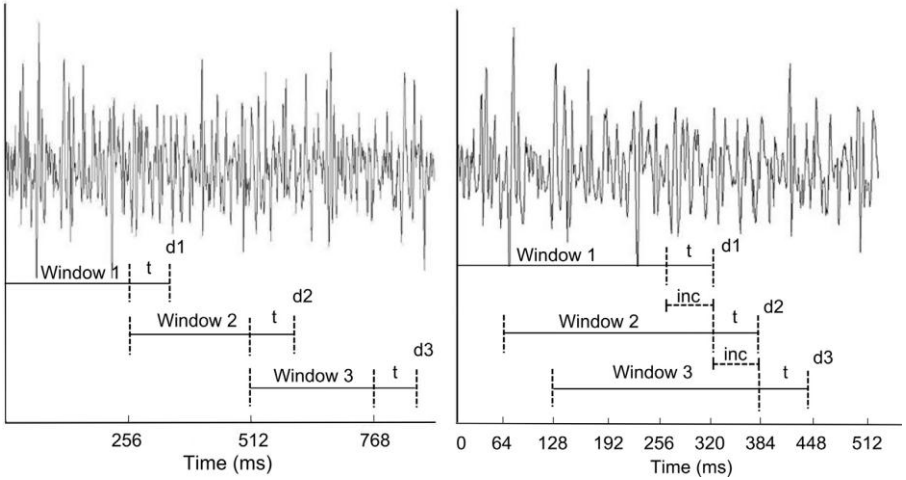
The main idea of Onset parameters is to calculate how long a muscle ne eds to turn on, how long it stays on and how much EMG is used within the onset period



Estimating Muscle Onset Latency Steps

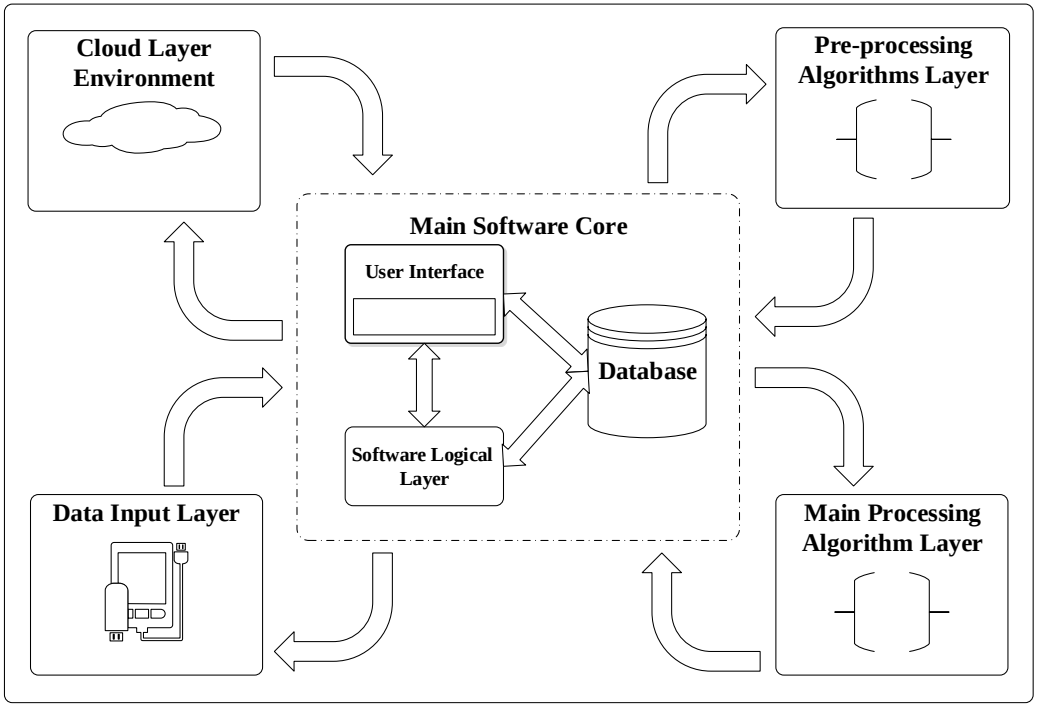


Root Mean Square (RMS)



$$y = \sqrt{\frac{1}{N}\sum_{i=0}^{N-1} x_i^2}$$

Software Architecture Model



Software Performance Test

	Software under Windows operating system	Software under Android operating system
Sample 1	2.0 milliseconds	2.0 milliseconds
Sample 2	1.5 milliseconds	1.5 milliseconds
Sample 3	1.5 milliseconds	1.5 milliseconds
Sample 4	0.8 milliseconds	0.8 milliseconds
Sample 5	1.6 milliseconds	1.6 milliseconds
Sample 6	1.7 milliseconds	1.8 milliseconds
Sample 7	1.9 milliseconds	1.9 milliseconds
Sample 8	1.9 milliseconds	1.9 milliseconds
Sample 9	1.9 milliseconds	1.9 milliseconds
Sample 10	2.3 milliseconds	2.1 milliseconds

THANKS

FOR YOUR ATTENTION

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