

EMG ASSIGNMENT – 2

GROUP - 7

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QUESTIONS:

Why the down sampling is computed at the end of the EMG processing?

The initial process is to filter the signal using bandpass FIR filter. And then later perform full wave rectification. The rectification will change the frequency content of the signal again. So, we do low pass filtering again on the signal and then down-sample it by lowering its sampling rate. downsampling is used to reduce the length (or weight) of the data, to optimize the computations over useful information, it needs to be done at the end of the preprocessing.

Down sampling may violate the Nyquist rule, as the new sample rate may be less than twice the signal's bandwidth, producing aliasing, so the data should go through a low-pass filter first. Hence down sampling is done at the end.

When the muscle activation starts with respect to the movement (see motion signal)?

- Before the development is performed, the muscle activation signal decreases (falls) a couple of milliseconds. And the muscle activation signal rises a few milliseconds before the movement is performed. This is because the movement is the consequence of the harmonic activations of the fibers. Another component of delay is the limb acceleration time, that entails a transient time before a movement can be registered.

Which differences can you detect between the sets with and without the application of the force fields?

In the event of no force, the movement was discovered to be pretty much straight and follows the objective point (target) in practically straight lines. While when force is applied, the direction of the x and y is disoriented and no more follows a straight line to arrive at the objective (target). We can see from the first set, that the muscle activation mean is quite higher than the other cases as the person needs to get used to the manipulandum resistance.