Initial Experiment of Muscle Fatigue During Driving Game Using Electromyography

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***Abstract*—The road accident increases each year due to increased vehicle on the road. Driver vigilance easily distracted when in a state of fatigue and sleepiness. This research proposes to use physiological measures of electromyography (EMG) signal to assess muscle fatigue during driving game obtained from biceps brachii. The experiment starts with data collection of EMG signal for 3 subjects while driving Need for Speed the Run Game for 2 hours. Then signal preprocessing is applied to remove artifact in EMG signal. Next, the EMG signal is transformed into the frequency-domain using Fast Fourier Transform (FFT). From FFT the Power Spectral Density (PSD) and Energy Spectral Density (ESD) can be obtained. Mean, median, RMS and average powers in PSD are calculated. While from the ESD, total energy was calculated. Based on results obtained (RMS = 9.7198, average power = 94.4744, mean = 6.2451 and median = 6.2456), the objective for the project is achieved. The result shows that the PSD is better used to evaluate the biceps brachii muscle fatigue compared to ESD.**

Keywords—muscle fatigue; driving game; electromyography; PSD; ESD