

ABSTRACT

The development of inertial sensor technology and signal processing methods has opened the door to more accurate and effective gait analysis, including monitoring human leg movements. One of the promising methods for implementing digital filters on inertial sensors is the Chebyshev filtering method. Develop a method or system that is capable of analyzing gait on a stroke sufferer with a high level of accuracy. Optimizing signal processing techniques and using digital filters (Low Pass Filter) with the Chebyshev method to process inertial sensor data stably and consistently. The Chebyshev method can better understand an individual's gait, and enables accurate and informative monitoring of human movement. The results show changes in pitch angle values before and after the filter: adults (21.81° to 23.06°), elderly (19.28° to 8.17°), and stroke sufferers (13.6° to 8.62°). The roll angle value also changes: adults (-0.38° to -2.15°), elderly (-4.42° to -3.08°), and stroke sufferers (-2.1° to -2.21°). Total steps for 30 seconds from pitch: adults 26, elderly 26, stroke sufferers 18. Total steps during 30 seconds from roll: adults 28, elderly 26, stroke sufferers 21. The analysis results show that the Chebyshev filter is effective in maintaining the main characteristics of the signal and can produce more stable signal data. This research has good potential in providing an understanding of the signal frequency characteristics of the gait of adults, the elderly and stroke sufferers.

Keywords: *Chebyshev, Gait, Low Pass Filter, Inertial Sensors, Stroke.*