Alternatively to pressure sensors, accelerometer-based systems were later developed [39].De Gauna et. al [45] proposed three methods, with different algorithmic complexities: an improved linear filtering, that computes compression depth signal from acceleration signal by using a designed band-pass filter that performs double-integration; the detection of the zero-crossing instants in the velocity signal, which computes velocity signal from acceleration signal by performing single-integration and calculates compression depth and rate from the analysis of zero crossing instants; and the spectral analysis of the acceleration signal, which computes compression depth and rate directly from the acceleration signal by using the fast Fourier transform.Among the discussed alternatives, the algorithm based on the spectral analysis of the acceleration signal provided the most accurate results, since it computes compression depth and rate directly from the acceleration signal, avoiding integration errors, although it has the highest algorithmic complexity.However, since all accelerometers are sensible to movement-associated noise, double-integrating the acceleration signal is prone to cumulative errors which cause a significant drift in displacement signal, impeding an accurate estimation of compression depth [39].Other errors are introduced in compression depth calculation by the use of accelerometers, with origin on the compliant surface effect [39], and on sensor tilting during compressions, since gravitational acceleration component is dependent of sensor orientation [39].Some developments have been made to surpass the integration cumulative errors by using signal processing techniques over the extracted acceleration .signal