

ABSTRACT**PARTICLE FILTERING FOR CONTINUOUS TRACKING AND CORRECTION OF
BODY JOINT POSITIONS**

Skeletal recording devices (e.g., Microsoft Kinect®) has been gaining popularity in home-based rehabilitation solution due to its affordability and ease of use. It is used as a marker less human skeleton tracking device. However, apart from the fact that the skeleton data are contaminated with high frequency noise, the major drawback lies in the inability to retain the anthropometric properties, for example, the body segments' length, which varies with time during the tracking. Embodiments of the present disclosure provide systems that implement a particle filter based approach to track the human skeleton data in presence of high frequency noise and multi-objective genetic technique is further implemented to reduce the bone length variations. Further multiple segments in skeleton are filtered simultaneously and segments' lengths are preserved by considering their interconnection for obtained corrected set of body joint positions which ensures that the body segment length is maintained close to ground truth.

Fig. 2