ABSTRACT

Unimaginable are the difficulties faced by patients affected by sensory-motor disabilities while executing day to day activities. The flamboyant progress that has made in other areas of medical science does not translate itself in diagnosing them. Early detection and personalized therapy of these disorders is still out of reach. Present disclosure provides systems and methods for optimizing a joint cost function and detecting neuro muscular profiles (e.g., state of user under observation) thereof by implementing a model that quantifies these disorders in terms of a cost functional, which captures the trade-off between the torques applied and the velocities experienced at the joints. Estimation of this cost functional, otherwise known as Inverse optimal control was then carried out using an optimization procedure. To validate ability of estimated cost functional to distinguish weakly distinct neuro-motor conditions, Microsoft Kinect® motion capture data from normal subjects and a patient population with mild sensory-motor disabilities.

Figure 3