We Claim:

1. A processor implemented method, comprising:

obtaining from a Kinect® sensor, neuro motor data pertaining to a User Under Observation (UUO), wherein the neuro motor data comprises information pertaining to a plurality of skeletal joints specific to one or more actions being performed by the UUO (302);

scaling a joint model for each UUO by identifying the one or more actions performed on the plurality of skeletal joints (304) to match one or more experimentally obtained lengths of the plurality of skeletal joints;

parameterizing the scaled joint model using one or more physiologically interpretable model parameters to obtain a joint cost function (JC) (306);

optimizing, using an inverse optimal control technique, the joint cost function, by tuning the one or more physiologically interpretable model parameters (308), wherein the inverse optimal control technique is bi-level optimization in nature and an optimal solution is required at two levels, and wherein a first level requires finding a right trajectory by using algebraic Riccati formulation and a second level is solved using a downhill simplex algorithm;

determining a level of the tuning of the one or more physiologically interpretable model parameters based on the optimized joint cost function (310);

performing based on the level of the tuning, a comparison between the one or more tuned physiologically interpretable model parameters and one or more corresponding model parameters pre-computed for a normal user (NU) (312), wherein the one or more physiologically interpretable model parameters comprise one or more applied torques at one or more skeletal joints of the plurality of skeletal joints in the joint model, velocity of motion at the one or more skeletal joints under consideration and one or more Euler angles of the one or more skeletal joints; and

detecting one or more states of a plurality of neuro muscular profiles (314), wherein the neuro muscular profiles are detected when variation(s) in one or more values associated with the one or more tuned physiologically interpretable model parameters are determined in comparison to the one or more corresponding model parameters pre-computed for the normal user (NU), and wherein the neuro muscular profiles are modeled velocity profiles that indicate a plot of a temporal evolution of modeled and observed velocity vs. a frame of Kinect data.

2. The processor implemented method of claim 1, wherein the step of scaling the joint model is based on the one or more actions that are extracted by tracking real world motion of the UUO.

3. A system (100), comprising:

a memory (102) storing instructions;

one or more communication interfaces (106); and

one or more hardware processors (104) coupled to the memory (102) via the one or more communication interfaces (106), wherein the one or more hardware processors (104) are configured by the instructions to:

obtain from a Kinect® sensor, neuro motor data pertaining to a User Under Observation (UUO), wherein the neuro motor data comprises information pertaining to a plurality of skeletal joints specific to one or more actions being performed by the UUO,

scale a joint model for each UUO by identifying the one or more actions performed on the plurality of skeletal joints to match one or more experimentally obtained lengths of the plurality of skeletal joints,

parameterize the scaled joint model using one or more physiologically interpretable model parameters to obtain a joint cost function (JC),

optimize, using an inverse optimal control technique, the joint cost function, by tuning the one or more physiologically interpretable model

parameters, wherein the inverse optimal control technique is bi-level optimization in nature and an optimal solution is required at two levels, and wherein a first level requires finding a right trajectory by using algebraic Riccati formulation and a second level is solved using a downhill simplex algorithm,

determine a level of the tuning of the one or more physiologically interpretable model parameters based on the optimized joint cost function,

perform based on the level of the tuning, a comparison between the one or more tuned physiologically interpretable model parameters and one or more corresponding model parameters pre-computed for a normal user (NU), wherein the one or more physiologically interpretable model parameters comprise one or more applied torques at one or more skeletal joints of the plurality of skeletal joints in the joint model, velocity of motion at the one or more skeletal joints under consideration and one or more Euler angles of the one or more skeletal joints, and

detect one or more states of a plurality of neuro muscular profiles, wherein the neuro muscular profiles are detected when variation(s) in one or more values associated with the one or more tuned physiologically interpretable model parameters are determined in comparison to the one or more corresponding model parameters pre-computed for the normal user (NU), and wherein the neuro muscular profiles are modeled velocity profiles that indicate a plot of a temporal evolution of modeled and observed velocity vs. a frame of Kinect data.

4. The system of claim 3, wherein the joint model is scaled based on the one or more actions that are extracted by tracking real world motion of the UUO.

5. One or more non-transitory machine readable information storage mediums comprising one or more instructions which when executed by one or more hardware processors cause:

obtaining from a Kinect® sensor, neuro motor data pertaining to a User Under Observation (UUO), wherein the neuro motor data comprises information pertaining to a plurality of skeletal joints specific to one or more actions being performed by the UUO;

scaling a joint model for each UUO by identifying the one or more actions performed on the plurality of skeletal joints to match one or more experimentally obtained lengths of the plurality of skeletal joints;

parameterizing the scaled joint model using one or more physiologically interpretable model parameters to obtain a joint cost function (JC);

optimizing, using an inverse optimal control technique, the joint cost function, by tuning the one or more physiologically interpretable model parameters, wherein the inverse optimal control technique is bi-level optimization in nature and an optimal solution is required at two levels, and wherein a first level requires finding a right trajectory by using algebraic Riccati formulation and a second level is solved using a downhill simplex algorithm;

determining a level of the tuning of the one or more physiologically interpretable model parameters based on the optimized joint cost function;

performing based on the level of the tuning, a comparison between the one or more tuned physiologically interpretable model parameters and one or more corresponding model parameters pre-computed for a normal user (NU), wherein the one or more physiologically interpretable model parameters comprise one or more applied torques at one or more skeletal joints of the plurality of skeletal joints in the joint model, velocity of motion at the one or more skeletal joints under consideration and one or more Euler angles of the one or more skeletal joints; and

detecting one or more states of a plurality of neuro muscular profiles, wherein the neuro muscular profiles are detected when variation(s) in one or more values associated with the one or more tuned physiologically interpretable model parameters are determined in comparison to the one or more corresponding model parameters pre-computed for the normal user (NU),

and wherein the neuro muscular profiles are modeled velocity profiles that indicate a plot of a temporal evolution of modeled and observed velocity vs. a frame of Kinect data.

6. The one or more non-transitory machine readable information storage mediums of claim 5, wherein the step of scaling the joint model is based on the one or more actions that are extracted by tracking real world motion of the UUO.