CLAIMS

What is claimed is:

1. A method for training an AI regression model for allowing a user to intuitively control an electronic device using neuromuscular movements, comprising:

positioning a plurality of sensors at a plurality of particular positions on a human body for sensing neural signals from the human body;

recording a first set of neural signals sensed by each of the plurality of sensors in a continuous manner, wherein the recording of the first set of neural signals is performed in conjunction with at least one of: (i) mimicked training in which the user attempts to mimic a sequence of motions performed by a virtual limb; and (ii) mirrored training in which the user mirrors motions performed by a not-amputated limb;

simultaneous with the recording of the first set of neural signals, recording a first set of motion intents in a continuous manner, the first set of motion intents corresponding to a first sequence of body movement;

training an artificial intelligence (AI) regression model using a machine learning neural network, the AI regression model continuously mapping the first set of neural signals to joint angle values of a virtual hand based upon the first set of motion intents;

in a different training session, receiving a second set of neural signals from the plurality of sensors in a continuous manner;

based upon the AI regression model, predicting a second set of motion intents in response to the second set of neural signals, wherein the second set of motion intents are different than the first set of motion intents;

causing the electronic device to perform an action based upon the second set of motion intents; and

on a session-to-session basis, incrementally updating the AI regression model by accounting for a continuous mapping of the second set of neural signals to the second set of motion intents.

2. The method as claimed in claim 1, wherein the neural network includes a deep neural network and a modified Kalman (MKF) filter.

3. The method as claimed in claim 1, comprising identifying one or more ultra-violet (“UV”) tattoos on the human body,

wherein the positioning of the plurality of sensors is based on the identified one or more UV tattoos.

4. The method as claimed in claim 3, comprising an alignment indicator configured to align one or more markers of the human body with the plurality of sensors.

5. The method as claimed in claim 4, wherein the alignment indicator includes one or more custom-positioned grommets coupled to the plurality of sensors and configured to align with one or more markings of the human body.

6. The method as claimed in claim 3, wherein the identifying of one or more UV tattoos comprises identifying one or more markings using an ultrasonic imaging device.

7. The method as claimed in claim 1, wherein each set of motion intents is based on a set of motions performed by a virtual hand,

wherein the recording of a first set of neural signals is performed when the human body is mimicking the set of motions performed by the virtual hand.

8. The method as claimed in claim 1, wherein each set of motion intents is based on a set of motions performed by a non-amputated limb,

wherein the recording of a first set of neural signals is performed when an amputated limb is mirroring the set of motions performed by the non-amputated limb.

9. The method as claimed in claim 8, wherein the set of motions performed by a non-amputated limb is recorded by an imaging device.

10. The method as claimed in claim 9, wherein the set of motions performed by the non-amputated limb is aligned based on a deviation of the non-amputated limb from a resting hand position.

11. The method as claimed in claim 8, wherein each set of motion intents is generated based on an output of the electronic device operated by the non-amputated limb.

12. The method as claimed in claim 11 wherein the electronic device is one of (1) a prosthesis, (2) a keyboard, (3) a game stick, or (4) a switch.

13. A computing system comprising:

one or more processors; and

one or more computer-readable media having stored thereon computer-executable instructions that are structured such that, when executed by the one or more processors, the computer-executable instructions configure the computing system to:

receive a first set of neural signals generated in a continuous manner by a plurality of sensors positioned at a plurality of particular positions on a human body for sensing neural signals from the human body;

simultaneous with the receiving of the first set of neural signals, receive a first set of motion intents associated with a first sequence of body movements in a continuous manner, wherein the first set of motion intents are received in conjunction with at least one of: (i) mimicked training in which a user attempts to mimic a sequence of motions performed by a virtual limb; and (ii) mirrored training in which the user mirrors motions performed by a not-amputated limb; and

train an artificial intelligence (AI) regression model using a machine learning neural network, wherein:

the AI regression model continuously maps the first set of neural signals to joint angle values of a virtual hand based upon the first set of motion intents,

in response to receiving a second set of neural signals generated by the plurality of sensors in a continuous manner and during a different training session, the AI regression model is configured to predict a second set of motion intents, causing an electronic device to perform an action associated with the second set of motion intents, wherein the second set of motion intents are different than the first set of motion intents, and

on a session-to-session basis, incrementally updating the AI regression model by accounting for a continuous mapping of the second set of neural signals to the second set of motion intents.

14. A sleeve connected to an electronic device, comprising:

a plurality of sensors configured to be positioned at a plurality of predetermined positions of a human body to generate electric signals in a continuous manner; and

an alignment indicator configured to align one or more ultra violet (UV) tattoo markers on the human body with one or more markers of the sleeve;

wherein the sleeve is in communication with one or more processors and one or more computer-readable media having stored thereon an artificial intelligence (AI) regression model and computer-executable instructions, the computer-executable instructions are structured such that, when executed by the one or more processors, the computer-executable instructions configure the sleeve to:

sense a first set of neural signals from the human body in a continuous manner, wherein the sensing of the neural signals is performed during at least one of: (i) mimicked training in which a user attempts to mimic a sequence of motions performed by a virtual limb; and (ii) mirrored training in which the user mirrors motions performed by a not-amputated limb,

use the AI regression model to predict a first motion intent in response to the first set of neural signals, wherein the first motion intent comprises a continuous mapping of neural signals to joint angle values of a virtual hand,

in a different training session, receiving a second set of neural signals from the plurality of sensors in a continuous manner;

based upon the AI regression model, predicting a second motion intent in response to the second set of neural signals, wherein the second set of motion intents are different than the first set of motion intents;

cause the electronic device to perform an action based upon the second motion intent; and

on a session-to-session basis, incrementally updating the AI regression model by accounting for a continuous mapping of the second set of neural signals to the second motion intent.