## CLAIMS

**What is claimed is:**

1. A method for providing real-time assessment of fall risk, the method comprising:

providing a user with a survey comprising questions directed to eliciting information regarding assessing the fall risk across a plurality of domains, the survey comprising an environment survey comprising questions directed to eliciting information regarding assessing falls risk in an environmental domain;

receiving the elicited information comprising answers to the questions that are indicative of the fall risk of falling of the user;

encrypting the elicited information for transmission to a cloud-based primary key design database for storage;

recording, via a depth camera system, depth video data of the user walking back and forth in front of the depth camera system;

determining, based on the depth video data, at least one spatio-temporal gait characteristic associated with the user walking back and forth in front of the depth camera system;

determining an environment score for the user regarding the environment domain of the survey, the environment score being determined based on the elicited information comprising answers to the questions of the environment survey;

conducting a quantitative fall risk analysis based on the at least one spatio-temporal gait characteristic and the elicited information and further based on the environment score;

displaying a representation of the activity to be performed by the user, via an interactive animated conversational graphical user interface and displaying at least a portion of the quantitative fall risk analysis to the user and, providing in real-time, consultative recommendations based on the quantitative fall risk analysis, wherein providing the consultative recommendations includes:

receiving a predetermined threshold associated with a domain from a cloud-based normative data storage, wherein the domain is the environment domain;

comparing a domain score of the quantitative fall risk analysis to the predetermined threshold, wherein the domain score is the determined environment score;

determining, based on the comparison, that the domain score exceeds the predetermined threshold; and

displaying, if the domain score exceeds the predetermined threshold, a recommendation to the user, wherein the recommendation is evidenced-based recommendations for low-risk environmental designs.

2. The method as recited in claim 1, wherein the providing the user with the survey includes presenting the questions with the interactive animated conversational graphical user interface.

3. The method as recited in claim 1, wherein the plurality of domains include history, medication, environmental, physical, and vision.

4. The method as recited in claim 1, wherein the determining the at least one spatio-temporal gait characteristic includes tracking a position and orientation of the user in the depth video data.

5. The method as recited in claim 1, wherein the at least one spatio-temporal gait characteristic includes one or more of a gait velocity, a stride length, a step length, and a step width.

6. The method as recited in claim 1, wherein the at least one spatio-temporal gait characteristic includes one or more of a time in stance, a time in swing, a time in double support, a stance time variability, and a swing time variability.

7. The method as recited in claim 1, wherein the at least one spatio-temporal gait characteristic includes one or more of a test duration, a turning duration, a sit-to-stand duration, a stand-to-sit duration, a number of sit-to-stand repetitions completed within a predetermined period of time, and a number of stand-to-sit repetitions completed within a predetermined period of time.

8. The method as recited in claim 1, further comprising providing, in real-time, consultative recommendations based on the quantitative fall risk analysis.

9. The method as recited in claim 8, wherein providing the consultative recommendations includes:

accessing a cloud-based normative data storage having normative data, fall risk ratios, and recommendations;

comparing the quantitative fall risk analysis to the normative data and fall risk ratios; and

based on the comparison, selecting a recommendation of the recommendations accessed from the cloud-based normative data storage.

10. A system for providing real-time assessment of falling risk, the system comprising:

a kiosk;

a tablet device communicatively coupled to the kiosk;

a depth camera system communicatively coupled to the kiosk;

at least one processor; and

a memory storing processor-executable instructions, wherein the at least one processor is configured to implement the following operations upon executing the processor-executable instructions:

providing, by the tablet device, a user with a survey comprising questions directed to eliciting information regarding assessing the fall risk

across a plurality of domains, the survey comprising an environment survey comprising questions directed to eliciting information regarding assessing falls risk in an environmental domain;

receiving, by the tablet device, the elicited information comprising answers to the questions that are indicative of the fall risk of the user;

encrypting the elicited information for transmission to a cloud-based primary key design database for storage;

recording, via the depth camera system, depth video data of the user walking back and forth in front of the depth camera system;

determining an environment score for the user regarding the environment domain of the survey, the environment score being determined based on the elicited information comprising answers to the questions of the environment survey;

conducting a quantitative fall risk analysis based on the at least one spatio-temporal gait characteristic and the elicited information and further based on at least one environment score;

displaying, on the tablet device, at least a portion of the quantitative fall risk analysis to the user and, providing in real-time, consultative recommendations based on the quantitative fall risk analysis, wherein providing the consultative recommendations includes:

receiving a predetermined threshold associated with a domain from a cloud-based normative data storage, wherein the domain is the environment domain;

comparing a domain score of the quantitative fall risk analysis to the predetermined threshold, wherein the domain score is the determined environment score;

determining, based on the comparison, that the domain score exceeds the predetermined threshold; and

displaying, if the domain score exceeds the predetermined threshold, a recommendation to the user, wherein the recommendation is evidenced-based recommendations for low-risk environmental designs.

11. The system as recited in claim 10, further comprising an interactive animated conversational graphical user interface displayed by the tablet device.

12. The system as recited in claim 11, wherein the at least one processor is further configured to implement an operation of displaying a representation of the user walking back and forth in front of the depth camera system to be performed by the user via the interactive animated conversational graphical user interface.

13. The system as recited in claim 10, wherein the determining the at least one spatio-temporal gait characteristic includes tracking a position and orientation of the user in the depth video data.

14. The system as recited in claim 10, wherein the at least one spatio-temporal gait characteristic includes one or more of a gait velocity, a stride length, a step length, and a step width.

15. The system as recited in claim 10, wherein the at least one spatio-temporal gait characteristic includes one or more of a time in stance, a time in swing, a time in double support, a stance time variability, and a swing time variability.

16. The system as recited in claim 10, wherein the at least one spatio-temporal gait characteristic includes one or more of a test duration, a turning duration, a sit-to-stand duration, a stand-to-sit duration, a number of sit-to-stand repetitions completed within a predetermined period of time, and a number of stand-to-sit repetitions completed within a predetermined period of time.

17. The system as recited in claim 10, wherein the at least one processor is further configured to implement an operation of providing, in real-time, consultative recommendations based on the quantitative fall risk analysis.

18. The system as recited in claim 17, wherein providing the consultative recommendations includes:

receiving a predetermined threshold associated with a domain from a cloud-based normative data storage;

comparing a domain score of the quantitative fall risk analysis to the predetermined threshold;

determining, based on the comparison, that the domain score exceeds the predetermined threshold; and

displaying, if the domain score exceeds the predetermined threshold, a recommendation to the user.

19. A non-transitory computer readable medium having embodied thereon instructions being executable by at least one processor to perform a method for providing real-time assessment of fall risk, the method comprising:

providing a user with a survey comprising questions directed to eliciting information regarding assessing the fall risk across a plurality of domains, the survey comprising an environment survey comprising questions directed to eliciting information regarding assessing falls risk in an environmental domain;

receiving the elicited information comprising answers to the questions that are indicative of the fall risk of the user;

encrypting the elicited information for transmission to a cloud-based primary key design database for storage;

recording, via a depth camera system, depth video data of the user walking back and forth in front of the depth camera system;

determining, based on the depth video data, at least one spatio-temporal gait characteristic associated with the user walking back and forth in front of the depth camera system;

determining an environment score for the user regarding the environment domain of the survey, the environment score being determined based on the elicited information comprising answers to the questions of the environment survey;conducting a quantitative fall risk analysis based on the at least one spatio-temporal gait characteristic and the elicited information and further based on the environment score ;

displaying at least a portion of the quantitative fall risk analysis to the user, providing in real-time, consultative recommendations based on the quantitative fall risk analysis, wherein providing the consultative recommendations includes:

receiving a predetermined threshold associated with a domain from a cloud-based normative data storage, wherein the domain is the environment domain;

comparing a domain score of the quantitative fall risk analysis to the predetermined threshold, wherein the domain score is the determined environment score;

determining, based on the comparison, that the domain score exceeds the predetermined threshold; and

displaying, if the domain score exceeds the predetermined threshold, a recommendation to the user, wherein the recommendation is evidenced-based recommendations for low-risk environmental designs.