Claims

1. A patient monitoring system comprising:

a camera that selectively delivers a video feed to a monitoring station;

a processor that evaluates the video feed, wherein the processor converts the video feed into a plurality of data points for an elopement detection system, and wherein the plurality of data points for the elopement detection system correspond at least to a combination of facial features and components of clothing for each person within the video feed, wherein the processor is further configured to;

associate the combination of facial features and the components of clothing for each person to define a confirmed association;

identify, for each confirmed association, whether the person is a patient or a non-patient;

verify the identity of the confirmed association of the patient by comparing updated data points from the video feed with the confirmed association; and

activate an alert when the confirmed association of the patient is unverified based upon the comparison with the updated data points.

2. The patient monitoring system of claim 1, wherein the confirmed association is unverified where at least one of the confirmed association of the patient is no longer within the video feed of the camera, and the combination of facial features and the components of clothing for the confirmed association are no longer able to be associated with respect to the patient.

3. The patient monitoring system of claim 1, wherein the processor includes a first server that analyzes buffered sections of the video feed to locate and track the combination of facial features that make up the confirmed association, and wherein the processor includes a second server that analyzes the buffered sections of the video feed to locate and track the components of clothing that make up the confirmed association.

4. The patient monitoring system of claim 3, wherein the first server and the second server define the elopement detection system, and wherein the elopement detection system is activated when the patient is located outside of a predetermined boundary, and wherein the predetermined boundary is at least one of a bed of the patient and a non-mobile seating area of the patient.

5. The patient monitoring system of claim 1, wherein the camera includes at least one actuator that provides pan, tilt, and zoom (PTZ) tracking for monitoring the confirmed association of the patient within a patient care setting, and wherein the PTZ tracking of the camera is operated by a remote client that receives and monitors buffered sections of the video feed.

6. The patient monitoring system of claim 1, wherein the components of clothing for defining the confirmed association include at least one of clothing outline, clothing color, clothing pattern, transition from torso to legs, and leg covering configuration.

7. The patient monitoring system of claim 1, wherein the combination of facial features for defining the confirmed association include at least one of outline of hair, outline of face, and relative locations of at least two of left eye, right eye, mouth, end of nose, bridge of nose, left ear, right ear, and chin.

8. The patient monitoring system of any one of claims 1-7, wherein the video feed is delivered as buffered sections of the video feed, and wherein the processor evaluates the buffered sections of the video feed and converts each of the buffered sections of the video feed into the plurality of data points for the elopement detection system.

9. A method for operating an elopement detection system for a patient monitoring system, the method comprising steps of:

activating the elopement detection system when a patient is outside of a predetermined boundary;

analyzing buffered sections of a video feed to identify a combination of facial features and components of clothing for the patient outside of the predetermined boundary;

associating the combination of facial features with the components of clothing for each person to define a confirmed association;

verifying the confirmed association of the patient by comparing the combination of facial features with the components of clothing of the patient; and

activating an alert if the confirmed association of the patient is unverified based upon changes in the combination of facial features or the components of clothing of the confirmed association.

10. The method of claim 9, wherein the step of analyzing the buffered sections of the video feed includes analyzing the buffered sections of the video feed to identify the combination of facial features and the components of clothing for a non-patient, and wherein the step of verifying the confirmed association of the patient occurs according to predetermined time intervals and after an obstruction is temporarily present between a camera and the patient.

11. The method of any one of claims 9-10, wherein the step of activating the alert occurs when the confirmed association of the patient is observed moving toward an egress of a patient care setting and is not visible within the video feed for a predetermined period of time.

12 A method for detecting an elopement condition, the method comprising steps of:

receiving user input to enable image processing, where the user input is related to a monitored patient exiting a predetermined boundary;

generating a new video stream handling a request related to the user input;

presenting the new video stream to an observer client for heightened monitoring of the monitored patient;

processing the new video stream using a real-time streaming protocol to compare the new video stream to historical data related to past elopement events;

adjusting a monitoring device to track the monitored patient within a patient care setting; and

activating an elopement alert when an elopement indicator is determined, wherein the elopement indicator includes confirmation that the monitored patient is outside of a video feed and is determined to be outside of the patient care setting.

13. The method of claim 12, wherein the real time streaming protocol is configured to track a combination of facial features and components of clothing for the monitored patient to form, and periodically verify, a confirmed association related to the monitored patient, and wherein the step of activating the elopement alert occurs when the real time streaming protocol is unable to verify the confirmed association of the monitored patient.

14. A patient monitoring system for predicting adverse events, the patient monitoring system comprising:

a camera that selectively delivers a video feed to a monitoring station, wherein the video feed is delivered as buffered sections of the video feed;

a processor that evaluates the buffered sections of the video feed, wherein the processor converts each of the buffered sections of the video feed into a plurality of data points, wherein the plurality of data points correspond at least to positions of features contained within the buffered sections of the video feed, wherein the processor is further configured to:

store the plurality of data points within a memory;

analyze the plurality of data points within a plurality of estimation networks; and

deliver the video feed to the monitoring station when the plurality of estimation networks determine that an adverse event is likely.

15. The patient monitoring system of claim 14, wherein the processor is further configured to:

compare the plurality of data points from the buffered section of the video feed with a previously stored set of data points;

determine a plurality of corresponding vectors reflecting a difference between the corresponding data points from the buffered section of the video feed and the previously stored set of data points;

analyze the plurality of data points and the plurality of corresponding vectors within the plurality of estimation networks; and

deliver the video feed to the monitoring station when the plurality of estimation networks determine that the adverse event is likely.

16. The patient monitoring system of claim 14, wherein the estimation networks include a pose estimation network, an object detection network, a relative depth network, a field segmentation network and a movement segmentation network.

17. The patient monitoring system of claim 14, wherein the memory includes one or more of an onsite memory and a cloud-based memory.

18. The patient monitoring system of any one of claims 14-17, wherein the buffered sections of the video feed include a video stream and an audio stream, and wherein each of the video stream and the audio stream of the buffered sections of the video feed are converted into a plurality of visual data points and a plurality of auditory data points of the plurality of data points.

19. A system for predicting an adverse event for a patient, the system comprising:

a database including a first data point related to a first care setting;

a camera configured to capture image data corresponding to a second care setting for the patient;

a display in communication with the camera for presenting the image data; and

a processing device communicatively coupled with the camera and the database, the processing device configured to:

determine, based on the image data, a second data point related to the second care setting;

compare the first data point to the second data point;

determine, based on a comparison of the first data point to the second data point, adverse event data corresponding to the adverse event, the adverse event data including probability data corresponding to a likelihood of the adverse event; and

communicate an instruction to present the probability data on the display.

20. The system of claim 19, wherein the probability data is operable between a warning state and a safe state, wherein the warning state corresponds to a higher likelihood of the adverse event and the safe state corresponds to a lower likelihood of the adverse event.