Claims

1. A natural language processing artificial intelligence network and data security system comprising:

a processor;

a non-transitory memory to store machine readable instructions;

wherein the processor is to execute the machine readable instructions to:

detect interactions of a user in a dataset using natural language processing, wherein the dataset comprises a plurality of interactions between a plurality of users on a network;

determine a plurality of textual features expressed in natural language in each of the interactions;

determine a plurality of emotional features for each of the interactions based on the plurality of textual features and an emotions index, wherein the emotions index associates textual features with emotional features;

determine an emotional state for each of the interactions based on an aggregation of the plurality of emotional features;

determine a chronological sequence of the emotional states for the user based on a time of each of the interactions and the determined emotional state for each of the interactions;

determine a probability of transitioning between different emotional states for the user based on the chronological sequence of emotional states for the user;

generate an emotions model as a primitive for artificial intelligence based on the probability of transitioning between different emotional states for the user;

determine an emotional stability value of the user based on the emotions model;

determine using an artificial intelligence subsystem whether the emotional stability value of the user is within a threshold, wherein the threshold is based on an emotional stability value of other users in the dataset; and

in response to the determination that the emotional stability value is within the threshold the artificial intelligence and data security subsystem regulates network permissions of the user.

2. The natural language processing artificial intelligence network and data security system of claim 1, wherein to determine the emotional stability value of the user the system is to:

determine transitions in the emotional state of the user in the chronological sequence of emotional states;

determine a count of interactions in the chronological sequence of emotional states between each of the transitions of emotional states; and

generate the emotional stability value of the user based on the transitions and the count of interactions between each of the transitions.

3. The natural language processing artificial intelligence network and data security system of claim 1, wherein to determine the emotional stability value of the user the system is to:

generate the emotional stability value based on an entropy rate of the emotions model, wherein the entropy rate of the emotions model is based on a time density of the emotional states in the chronological sequence of emotional states for the user.

4. The natural language processing artificial intelligence network and data security system of claim 1, wherein to determine the emotional state for each of the interactions the system is to:

determine type counts of each of the emotional features in each of the interactions based on the determined plurality of emotional features, wherein the type count is a count of each of different types of emotional features in each of the interactions;

determine a dominant emotional feature in each of the interactions based on a highest type count in each of the interactions; and

detect the emotional state for each of the interactions based on the dominant emotional feature.

5. The natural language processing artificial intelligence network and data security system of claim 1, wherein the emotions index comprises a types classification of emotional features and a plurality of textual features that maps to each of the types classification.

6. The natural language processing artificial intelligence network and data security system of claim 1, wherein the emotions index comprises: a types classification of emotional features based on cognitive processes; and a plurality of textual features that maps to each of the types classification.

7. The natural language processing artificial intelligence network and data security system of claim 1, wherein the emotions index comprises:

a types classification of emotional features; a hedonicity value associated with each of the emotional features; and

a plurality of textual features that maps to each of the types classification.

8. The natural language processing artificial intelligence network and data security system of claim 1, wherein the emotions index comprises:

a types classification of emotional features, wherein the emotional features in the index are balanced using pairs of emotional features representing opposite emotions; and

a plurality of textual features that maps to each of the types classification.

9. The natural language processing artificial intelligence network and data security system of claim 1, wherein each of the interactions detected for the user comprises a plurality of textual features expressed by the user per unit time.

10. The natural language processing artificial intelligence network and data security system of claim 1, wherein the processor is to execute the machine readable instructions to:

determine emotional stability values for other users in the dataset based on interactions for other users in the dataset; and

determine a threshold for the emotional stability value based on the emotional stability values for other users in the dataset.

11. A natural language processing artificial intelligence network and data security system to regulate access to data for a user, the system comprising:

a data storage device to store a set of data, wherein the set of data comprises a plurality of interactions between a plurality of users;

at least one processor to:

detect interactions of users in a dataset, wherein the interactions are in natural language;

determine using natural language processing a plurality of textual features in each of the interactions for each of the users;

determine a plurality of emotional features for each of the interactions based on the textual features and an emotions index, wherein the emotions index associates textual features with emotional features;

determine an emotional state for each of the interactions based on an aggregation of the plurality of emotional features;

determine a chronological sequence of emotional states for each of the users based on a time for each of the interactions and the determined emotional state for each of the interactions;

determine a win-loss table of interactions between sub-sets of two users during the same period of time for each of the two users, based on the determined chronological sequence of emotional states for each of the users;

determine a relative ranking of interactions between sets of the two users based on the win-loss tables of interactions;

determine whether the relative ranking of a user in the users exceeds a ranking threshold, wherein the ranking threshold is based on a deviation from a mean ranking of users in the dataset; and

based on the determination that the relative ranking of a user in the users exceeds the ranking threshold, the artificial intelligence network and data security subsystem modifies access to data on a data storage device for the user.

12. The natural language processing artificial intelligence network and data security system of claim 11, wherein to determine the emotional state for each of the interactions the system is to:

determine type counts of each of the emotional features in each of the interactions based on the determined plurality of emotional features, wherein the type count is a count of each of different types of emotional features in each of the interactions;

determine a dominant emotional feature in each of the interactions based on a highest type count in each of the interactions; and

detect the emotional state for each of the interactions based on the dominant emotional feature.

13. The natural language processing artificial intelligence network and data security system of claim 11, wherein the emotions index comprises: a types classification of emotional features based on cognitive processes; and a plurality of textual features that maps to each of the types classification.

14. The natural language processing artificial intelligence network and data security system of claim 11, wherein the emotions index comprises:

a types classification of emotional features; a hedonicity value associated with each of the emotional features; and

a plurality of textual features that maps to each of the types classification.

15. The natural language processing artificial intelligence network and data security system of claim 11, wherein the emotions index comprises:

a types classification of emotional features, wherein the emotional features in the index are balanced using pairs of emotional features representing opposite emotions; and

a plurality of textual features that maps to each of the types classification.

16. An emotional anomaly detection and access regulation method comprising:

storing, in a storage device, a set of data, wherein the set of data comprises a plurality of interactions between a plurality of users;

determining, by at least one processor, an emotional anomaly detection based on the stored set of data, wherein detecting the emotional anomaly includes:

detecting interactions of users in a dataset;

determining a plurality of textual features in each of the interactions for each of the users;

determining a plurality of emotional features for each of the interactions based on the textual features and an emotions index, wherein the emotions index associates textual features with emotional features;

determining an emotional state for each of the interactions based on an aggregation of the plurality of emotional features;

determining a chronological sequence of emotional states for each of the users based on a time for each of the interactions and the determined emotional state for each of the interactions;

determining a probability of transitioning between different emotional states for each of the users based on the chronological sequence of emotional states for each of the users;

determining an emotions model based on the probability of transitioning between different emotional states for the each of the users;

determining an emotional stability value of each of the users based on the emotions model;

determining a win-loss table of interactions between sub-sets of two users during the same period of time for each of the users, based on the determined emotional stability value for each of the users;

determining a relative ranking of interactions between sets of two of the users based on the determined win-loss table of interactions;

determining whether the relative ranking of a user in the users exceeds a ranking threshold, wherein the ranking threshold is based on a deviation from a mean ranking of users in the dataset;

based on the determination that the relative ranking of a user in the users exceeds the ranking threshold, identify an emotional anomaly in the user interaction; and

based on the determination that the relative ranking of the user in the users exceeds the ranking threshold, modifying access to data on a data storage device for the user.

17. The method of claim 16, wherein determining the emotional stability value of the user comprises:

determining transitions in the emotional states of each the users in the chronological sequence of emotional states;

determining a count of the interactions in the chronological sequence of emotional states between each of the transitions for each of the users; and

generating the emotional stability value of each of the users based on the transitions and the count of interactions between each of the transitions.

18. The method of claim 16, wherein determining the emotional stability value of the users comprises:

generating the emotional stability value based on entropy rates of the emotions models for each of the users, wherein the entropy rate of each emotions model is based on a time density of the emotional states in the chronological sequence of emotional states for the user.

19. The method of claim 16, wherein the emotions index comprises:

a types classification of emotional features based on cognitive processes; and

a plurality of textual features that maps to each of the types classification.

20. The method of claim 16, wherein the emotions index comprises:

a types classification of emotional features, wherein the emotional features in the index are balanced using pairs of emotional features representing opposite emotions; and

a plurality of textual features that maps to each of the types classification.