

CLAIMS

1. A computer-implemented method of detecting stress outcome or depression outcome or both in a subject, the method comprising:
 - 5 receiving, as input, location data providing information indicative of venues visited by the subject, the location data being provided by an access point situated at the venues;
processing the location data against a library of activities, stored in a database, to deduce one or more activities done at each of the visited venues, the deduction being based on an event log recorded at the visited venue;
 - 10 constructing a current movement pattern to capture a sequence of an activity from the deduced one or more activities being done;
calculating change values of one or more features by comparing the current movement pattern against a past movement pattern of a sequence for the same activity being done;
analysing the change values using a classification algorithm that models a relationship
15 between data from one or more movement patterns and their indicative stress outcome or depression outcome; and
providing, as output, a stress outcome or depression outcome or both in the subject.
2. The method of claim 1, wherein the stress outcome or the depression outcome has a binary
20 value.
3. The method of claim 1 or 2, wherein the past movement pattern is constructed from activities done over an earlier period of time by a population pool.
- 25 4. The method of claim 3, wherein the population pool contains data from peers to which the subject belongs.
5. The method of any one of the preceding claims, wherein the past movement pattern is constructed from activities done over an earlier period of time by the subject.
- 30 6. The method of any one of the preceding claims, wherein the location data comprises information indicative of venues visited by a group that is detected to have interacted with the subject, wherein the sequence of the deduced one or more activities includes activities the subject is deduced to have done with the group at the visited venues and wherein the calculated change values include
35 one or more features derived from the activities the subject is deduced to have done with the group at the visited venues.

7. The method of any one of the preceding claims, wherein the classification algorithm is configured to perform optimisation by analysing the change values of a selection from the one or more features.
- 5
8. The method of any one of the preceding claims, further comprising undertaking data interpolation to obtain missing data required to complete the sequence of one or more activities when constructing the current movement pattern.
- 10
9. The method of any one of the preceding claims, wherein the classification algorithm is trained using data of change in movement patterns providing information of one or more activities done at the visited venues and their corresponding indicative stress outcome or depression outcome.
10. The method of claim 9, wherein the data from the movement patterns include interpolated data used to complete a sequence of activities captured by the movement patterns.
- 15
11. The method of claim 9 or 10, wherein the training data excludes one or more activities that is unique to a domain to which the subject belongs.
- 20
12. The method of any one of the preceding claims, wherein the deduction of the one or more activities done at each of the visited venues is based on duration of the activity and time at which the activity was done.
13. The method of any one of the preceding claims, wherein the model used to provide an output of the stress outcome is different from the model used to provide an output of the depression outcome.
- 25
14. A computer-implemented system for detecting stress outcome or depression outcome or both in a subject, the system comprising:
- at least one microprocessor;
 - at least one non-volatile storage device;
 - at least one computer-readable memory device operatively associated with the microprocessor;
- 30
- and
- an input/output interface operatively associated with the microprocessor, wherein the computer-readable memory device contains computer-executable instruction code which, when
- 35
- executed via the microprocessor, configures the microprocessor to:

receive, via the input/output interface, location data providing information indicative of venues visited by the subject, the location data being provided by an access point situated at the venues;

5 process the location data against a library of activities, stored in the non-volatile storage device, to deduce one or more activities done at each of the visited venues, the deduction being based on an event log recorded at the visited venue;

construct a current movement pattern to capture a sequence of an activity from the deduced one or more activities being done;

10 calculate change values of one or more features by comparing the current movement pattern against a past movement pattern of a sequence for the same activity being done;

analyse the change values using a classification algorithm that models a relationship between data from one or more movement patterns and their indicative stress outcome or depression outcome; and

15 provide, as output, a stress outcome or depression outcome or both in the subject.

CLAIMS

1. A computer-implemented method of detecting stress outcome or depression outcome or both in a subject, the method comprising:
 - 5 receiving input from an access point situated at each venue visited by the subject, so that the input comprises location data providing information indicative of the venues visited by the subject, through the access point detecting presence of an electronic device registered to the subject;
 - processing the location data against a library of activities, stored in a database, to deduce one or more activities done at each of the visited venues, the deduction being based on an event log recorded
 - 10 at the visited venue;
 - constructing a current movement pattern to capture a sequence of an activity from the deduced one or more activities being done;
 - calculating change values of one or more features by comparing the current movement pattern against a past movement pattern of a sequence for the same activity being done;
 - 15 analysing the change values using a classification algorithm that models a relationship between data from one or more movement patterns and their indicative stress outcome or depression outcome; and
 - providing, as output, a stress outcome or depression outcome or both in the subject.
- 20 2. The method of claim 1, wherein the stress outcome or the depression outcome has a binary value.
3. The method of claim 1 or 2, wherein the past movement pattern is constructed from activities done over an earlier period of time by a population pool.
- 25 4. The method of claim 3, wherein the population pool contains data from peers to which the subject belongs.
5. The method of any one of the preceding claims, wherein the past movement pattern is
- 30 constructed from activities done over an earlier period of time by the subject.
6. The method of any one of the preceding claims, wherein the location data comprises information indicative of venues visited by a group that is detected to have interacted with the subject, wherein the sequence of the deduced one or more activities includes activities the subject is deduced to
- 35 have done with the group at the visited venues and wherein the calculated change values include one or

more features derived from the activities the subject is deduced to have done with the group at the visited venues.

7. The method of any one of the preceding claims, wherein the classification algorithm is configured to perform optimisation by analysing the change values of a selection from the one or more features.

8. The method of any one of the preceding claims, further comprising undertaking data interpolation to obtain missing data required to complete the sequence of one or more activities when constructing the current movement pattern.

9. The method of any one of the preceding claims, wherein the classification algorithm is trained using data of change in movement patterns providing information of one or more activities done at the visited venues and their corresponding indicative stress outcome or depression outcome.

10. The method of claim 9, wherein the data from the movement patterns include interpolated data used to complete a sequence of activities captured by the movement patterns.

11. The method of claim 9 or 10, wherein the training data excludes one or more activities that is unique to a domain to which the subject belongs.

12. The method of any one of the preceding claims, wherein the deduction of the one or more activities done at each of the visited venues is based on duration of the activity and time at which the activity was done.

13. The method of any one of the preceding claims, wherein the model used to provide an output of the stress outcome is different from the model used to provide an output of the depression outcome.

14. A computer-implemented system for detecting stress outcome or depression outcome or both in a subject, the system comprising:

at least one microprocessor;

at least one non-volatile storage device;

at least one computer-readable memory device operatively associated with the microprocessor;

and

an input/output interface operatively associated with the microprocessor, wherein the computer-readable memory device contains computer-executable instruction code which, when executed via the microprocessor, configures the microprocessor to:

5 receive, via the input/output interface, input from an access point situated at each venue visited by the subject, so that the input comprises location data providing information indicative of the venues visited by the subject, through the access point detecting presence of an electronic device registered to the subject;

 process the location data against a library of activities, stored in the non-volatile storage device,
10 to deduce one or more activities done at each of the visited venues, the deduction being based on an event log recorded at the visited venue;

 construct a current movement pattern to capture a sequence of an activity from the deduced one or more activities being done;

 calculate change values of one or more features by comparing the current movement pattern
15 against a past movement pattern of a sequence for the same activity being done;

 analyse the change values using a classification algorithm that models a relationship between data from one or more movement patterns and their indicative stress outcome or depression outcome;
and

 provide, as output, a stress outcome or depression outcome or both in the subject.
20