

CLAIMS

What is claimed is:

1. A computer-implemented method for providing a profile of an anchor value, comprising acts of:
 - detecting a plurality of digital interactions at different points in time;
 - for each digital interaction of the plurality of digital interactions:
 - identifying from the digital interaction an anchor value X of an anchor type T ; and
 - updating a profile of the anchor value X , wherein:
 - the profile of the anchor value X comprises a plurality of counters $C[i,j]$ ($i = 0, \dots, M-1; j = 0, \dots, N_i-1$);
 - for each $i = 0, \dots, M-1$ and $j = 0, \dots, N_i-1$, the counter $C[i,j]$ indicates a number of times an event E is observed during a time interval $I_{i,j}$; and
 - updating the profile of the anchor value X comprises:
 - analyzing the digital interaction to determine if the event Z is observed in connection with the digital interaction; and
 - in response to determining that the event Z is observed in connection with the digital interaction, incrementing the counter $C[i,0]$ for each $i = 0, \dots, M-1$.
2. The computer-implemented method of claim 1, wherein:
 - the time intervals $I_{0,j}$ ($j = 0, \dots, N_0-1$) are five-minute intervals and $N_0 = 12$;
 - the time intervals $I_{1,j}$ ($j = 0, \dots, N_1-1$) are one-hour intervals and $N_1 = 24$; and
 - the time intervals $I_{2,j}$ ($j = 0, \dots, N_2-1$) are one-day intervals and $N_2 = 14$.
3. The computer-implemented method of claim 1, wherein:
 - for each $i = 0, \dots, M-1$, the time intervals $I_{i,j}$ ($j = 0, \dots, N_i-1$) have a same length L_i .
4. The computer-implemented method of claim 3, wherein:
 - for each $i = 0, \dots, M-2$, $L_{i+1} = N_i * L_i$.
5. The computer-implemented method of claim 3, further comprises an act of:

for each $i = 0, \dots, M-1$, shifting the counters $C[i,j]$ ($j = 0, \dots, N_i-1$) periodically, wherein:
 a period for shifting the counters $C[i,j]$ ($j = 0, \dots, N_i-1$) is L_i , and
 shifting the counters $C[i,j]$ ($j = 0, \dots, N_i-1$) comprises:
 for each $j = 0, \dots, N_i-2$, set the counter $C[i,j+1]$ to a value of the counter $C[i,j]$; and
 set the counter $C[i,0]$ to 0.

6. The computer-implemented method of claim 1, wherein:
 determining if the event E is observed in connection with the digital interaction comprises determining if both the anchor value X and an anchor value Y are observed from the digital interaction.
7. The computer-implemented method of claim 1, wherein:
 a plurality of anchor values of a same anchor type are divided into a plurality of buckets of anchor values; and
 determining if the event E is observed in connection with the digital interaction comprises determining if both the anchor value X and any anchor value from a bucket B of anchor values are observed from the digital interaction.
8. The computer-implemented method of claim 7, wherein:
 the plurality of anchor values are divided into the plurality of buckets of anchor values at least in part by applying a hash-modding operation on the plurality of anchor values.
9. The computer-implemented method of claim 7, wherein:
 the plurality of anchor values comprise a plurality of network addresses;
 the plurality of buckets of anchor values comprise a plurality of buckets of network addresses; and
 the plurality of network addresses are divided into the plurality of buckets of network addresses at least in part by applying a hash-modding operation on the plurality of network addresses.

10. A computer-implemented method for analyzing a first digital interaction, the method comprising acts of:
- identifying an anchor value X from the first digital interaction;
 - identifying a first plurality of past digital interactions from which the anchor value X was previously observed, wherein each past digital interaction of the first plurality of past digital interactions has associated therewith a respective sameness score;
 - select a second plurality of past digital interactions from the first plurality of past digital interactions based at least in part on the respective sameness scores;
 - generating a profile for the anchor value X based on the second plurality of past digital interactions, wherein:
 - the profile comprises historical information regarding each attribute of a plurality of attributes; and
 - the plurality of attributes are selected based on measurements taken from the second plurality of past digital interactions;
 - for at least one attribute A_1 of the plurality of attributes, determining a value V_1 based on one or more measurements taken from the first digital interaction, wherein the one or more measurements relate to a physical interaction between a user and a device; and
 - determining a biometric score for the first digital interaction at least in part by comparing the value V_1 of the at least one attribute A_1 against the historical information regarding the at least one attribute A_1 .
11. The computer-implemented method of claim 10, wherein:
- the one or more measurements include a sequence of measurements taken from the first digital interaction; and
 - each measurement in the sequence of measurements has associated therewith a respective timestamp.
12. The computer-implemented method of claim 11, wherein:

each measurement in the sequence of measurements comprises a measurement selected from a group consisting of: a keystroke, a mouse click, a pointer location, an accelerometer reading, a gyroscope reading, a light sensor reading, a pressure sensor reading, and a noise sensor reading.

13. The computer-implemented method of claim 10, wherein:

the historical information regarding the at least one attribute A_1 comprises a historical mean and a historical standard deviation;

the historical mean and the historical standard deviation are determined based on historical values of the at least one attribute A_1 , the historical values being obtained from measurements taken from the second plurality of past digital interactions.

14. The computer-implemented method of claim 13, wherein the biometric score for the first digital interaction is determined at least in part by:

determining a difference between the historical mean and the value V_1 of the at least one attribute A_1 ; and

comparing the difference against the historical standard deviation.

15. The computer-implemented method of claim 10, wherein the plurality of attributes comprises a first plurality of attributes selected from a second plurality of attributes, and wherein the method further comprises acts of:

for each attribute of the second plurality of attributes, determine a respective quality metric based on values of the attribute, the values being obtained from measurements taken from the second plurality of past digital interactions; and

selecting the first plurality of attributes from the second plurality of attributes based at least in part on the respective quality metrics.

16. The computer-implemented method of claim 15, wherein

for at least one attribute A_2 of the second plurality of attributes, the quality metric is determined at least in part by comparing, against a population distribution for the at least one attribute A_2 , a mean and a standard deviation that are determined based on values of the at least

one attribute A_2 , the values being obtained from measurements taken from the second plurality of past digital interactions.

17. A system comprising at least one processor and at least one computer-readable storage medium having stored thereon instructions which, when executed, program the at least one processor to perform the method recited in any of claims 1-16.

18. At least one computer-readable storage medium having stored thereon instructions which, when executed, program at least one processor to perform the method recited in any of claims 1-16.