

WHAT IS CLAIMED IS:

1. A method comprising:
 - i) receiving, by a server computer from a client computer, a first rule comprising one or more variables, the first rule configured to predict that an event is either a first classification or a second classification, wherein the client computer comprises an automatic rule generator;
 - ii) applying, by the server computer, the first rule to an initial data set of events, each event associated with the first classification or the second classification, to identify events that are associated with the first classification;
 - iii) evaluating, by the server computer, a performance of the first rule;
 - iv) providing, by the server computer, data relating to the performance of the first rule to the client computer, wherein the client computer automatically evaluates the performance of the first rule and generates a second rule in response to the data relating to the performance of the first rule;
 - v) receiving, by the server computer, the second rule from the client computer
 - vi) evaluating, by the server computer, the performance of the second rule, wherein evaluating, by the server computer, the performance of the rules comprises:
 - a) generating, by the server computer, one or more first histograms based upon the initial data set of events, the one or more first histograms associated with one more variables, each first histogram containing a plurality of bins defined by boundaries such that each bin contains an equal number of events;
 - b) generating, by the server computer, one or more second histograms by binning the identified events associated with the first classification according to the boundaries;
 - c) generating, by the server computer, one or more third histograms by binning events in the initial data set of events associated with the first classification according to the boundaries; and

30 d) comparing, by the server computer, the one or more second
31 histograms with the one or more third histograms to identify one or more differences;
32 and

33 vii) providing, by the server computer, data relating to the
34 performance of the second rule to the client computer, wherein the client computer
35 automatically evaluates the performance of the second rule and generates a third
36 rule in response to the data relating to the performance of the second rule.

1 ~~2. The method of claim 1, wherein evaluating, by the server~~
2 ~~computer, the performance of the rules comprises:~~

3 ~~a) generating, by the server computer, one or more first histograms~~
4 ~~based upon the initial data set of events, the one or more first histograms associated~~
5 ~~with one more variables, each first histogram containing a plurality of bins defined by~~
6 ~~boundaries;~~

7 ~~b) generating, by the server computer, one or more second~~
8 ~~histograms by binning the identified events associated with the first classification~~
9 ~~according to the boundaries;~~

~~e) —generating, by the server computer, one or more third histograms by binning events in the initial data set of events associated with the first classification according to the boundaries; and~~

~~d) —comparing, by the server computer, the one or more second histograms with the one or more third histograms to identify one or more differences.~~

3.2. The method of claim 21, wherein comparing, by the server computer, the histograms to identify the one or more differences comprises applying an objective function, obtained via the client computer, to the histograms.

4.3. The method of claim 21, wherein comparing, by the server computer, the histograms to identify the one or more differences comprises computing a difference between an area in each bin in the one or more second histograms subtracted from an area in a corresponding bin in the one or more third histograms.

5.4. The method of claim 21, wherein the rules are associated with the one or more variables, the one or more histograms are associated with a first variable, of the one or more variables, and the method further comprises repeating steps b) – d) with the one or more histograms associated with a second variable, of the one or more variables.

6.5. The method of claim 21, wherein the one or more variables comprise one or more of: a transaction amount, a geographical area, a transaction channel, or a time period.

7.6. The method of claim 1, wherein the server computer receives the first rule and the second rule from the client computer via an application programming interface (API) exposed to the client computer by the server computer.

8.7. The method of claim 1, wherein the events comprise transactions, the first classification comprises fraudulent transactions, and the second classification comprises non-fraudulent transactions.

9.8. A system comprising:
a server computer comprising:

3 a processor; and
 4 a non-transitory computer-readable medium comprising code,
 5 executable by the processor, to implement a method comprising:
 6 i) receiving, by the server computer from a client computer, a first
 7 rule comprising one or more variables, the first rule configured to predict that an
 8 event is either a first classification or a second classification, wherein the client
 9 computer comprises an automatic rule generator;
 10 ii) applying, by the server computer, the first rule to an initial data
 11 set of events, each event associated with the first classification or the second
 12 classification, to identify events that are associated with the first classification;
 13 iii) evaluating, by the server computer, a performance of the first
 14 rule;
 15 iv) providing, by the server computer, data relating to the
 16 performance of the first rule to the client computer, wherein the client computer
 17 automatically evaluates the performance of the first rule and generates a second rule
 18 in response to the data relating to the performance of the first rule;
 19 v) receiving, by the server computer, the second rule from the
 20 client computer
 21 vi) evaluating, by the server computer, the performance of the
 22 second rule, wherein evaluating, by the server computer, the performance of the
 23 rules comprises:
 24 a) generating, by the server computer, one or more first histograms
 25 based upon the initial data set of events, the one or more first histograms associated
 26 with one more variables, each first histogram containing a plurality of bins defined by
 27 boundaries such that each bin contains an equal number of events;
 28 b) generating, by the server computer, one or more second
 29 histograms by binning the identified events associated with the first classification
 30 according to the boundaries;
 31 c) generating, by the server computer, one or more third
 32 histograms by binning events in the initial data set of events associated with the first
 33 classification according to the boundaries; and

34 d) comparing, by the server computer, the one or more second
35 histograms with the one or more third histograms to identify one or more differences;
36 and

37 vii) providing, by the server computer, data relating to the
38 performance of the second rule to the client computer, wherein the client computer
39 automatically evaluates the performance of the second rule and generates a third
40 rule in response to the data relating to the performance of the second rule.

1 ~~10. The system of claim 9, wherein evaluating, by the server~~
2 ~~computer, the performance of the rules comprises: _____~~

3 ~~a) generating, by the server computer, one or more first histograms~~
4 ~~based upon the initial data set of events, the one or more first histograms associated~~
5 ~~with one more variables, each first histogram containing a plurality of bins defined by~~
6 ~~boundaries;~~

7 ~~b) generating, by the server computer, one or more second~~
8 ~~histograms by binning the identified events associated with the first classification~~
9 ~~according to the boundaries;~~

10 e) ~~generating, by the server computer, one or more third~~
11 ~~histograms by binning events in the initial data set of events associated with the first~~
12 ~~classification according to the boundaries; and~~

13 d) ~~comparing, by the server computer, the one or more second~~
14 ~~histograms with the one or more third histograms to identify one or more differences.~~

1 ~~11.9.~~ The system of claim ~~108~~, wherein comparing, by the server
2 computer, the histograms to identify the one or more differences comprises applying
3 an objective function, obtained via the client computer, to the histograms.

1 ~~12.10.~~ The system of claim ~~108~~, wherein comparing, by the server
2 computer, the histograms to identify the one or more differences comprises
3 computing a difference between an area in each bin in the one or more second
4 histograms subtracted from an area in a corresponding bin in the one or more third
5 histograms.

1 ~~13.11.~~ The system of claim ~~108~~, wherein the rules are associated with
2 the one or more variables, the one or more histograms are associated with a first
3 variable, of the one or more variables, and the method further comprises repeating
4 steps b) – d) with the one or more histograms associated with a second variable, of
5 the one or more variables.

1 ~~14.12.~~ The system of claim ~~108~~, wherein the one or more variables
2 comprise one or more of: a transaction amount, a geographical area, a transaction
3 channel, or a time period.

1 ~~15.13.~~ The system of claim ~~98~~, wherein the server computer receives
2 the first rule and the second rule from the client computer via an application
3 programming interface (API) exposed to the client computer by the server computer.

1 ~~16.14.~~ The system of claim ~~98~~, wherein the events comprise
2 transactions, the first classification comprises fraudulent transactions, and the
3 second classification comprises non-fraudulent transactions.

1 ~~17.15.~~ A method comprising:

i) transmitting, by a client computer to a server computer, a first rule comprising one or more variables, the first rule configured to predict that an event is either a first classification or a second classification, wherein the client computer comprises an automatic rule generator;

ii) receiving, by the client computer from the server computer, data relating to performance of the first rule, wherein the server computer generated the data relating to the performance of the first rule by applying the first rule to an initial data set of events, each event associated with the first classification or the second classification, to identify events that are associated with the first classification and evaluating the performance of the first rule;

iii) automatically evaluating, by the client computer, the performance of the first rule, wherein evaluating the performance of the first rule comprises:

a) generating one or more first histograms based upon the initial data set of events, the one or more first histograms associated with one or more variables, each first histogram containing a plurality of bins defined by boundaries such that each bin contains an equal number of events;

b) generating one or more second histograms by binning the identified events associated with the first classification according to the boundaries;

c) generating one or more third histograms by binning events in the initial data set of events associated with the first classification according to the boundaries; and

d) comparing the one or more second histograms with the one or more third histograms to identify one or more differences;

iv) generating, by the client computer, a second rule in response to the data relating to the performance of the first rule;

v) transmitting, by the client computer to the server computer, the second rule;

vi) receiving, by the client computer from the server computer, data relating to the performance of the second rule;

vi) automatically evaluating, by the client computer, the performance of the second rule; and

34 vii) generating, by the client computer, a third rule in response to the
35 data relating to the performance of the second rule.

1 ~~18. The method of claim 17, wherein evaluating, by the server~~
2 ~~computer, the performance of the first rule comprises: _____~~

3 ~~a) generating, by the server computer, one or more first histograms~~
4 ~~based upon the initial data set of events, the one or more first histograms associated~~
5 ~~with one more variables, each first histogram containing a plurality of bins defined by~~
6 ~~boundaries;~~

7 ~~b) generating, by the server computer, one or more second~~
8 ~~histograms by binning the identified events associated with the first classification~~
9 ~~according to the boundaries;~~

10 e) ~~generating, by the server computer, one or more third~~
11 ~~histograms by binning events in the initial data set of events associated with the first~~
12 ~~classification according to the boundaries; and~~

13 d) ~~comparing, by the server computer, the one or more second~~
14 ~~histograms with the one or more third histograms to identify one or more differences.~~

1 ~~19.16.~~ The method of claim ~~18~~15, further comprising transmitting, by
2 the client computer, an objective function, wherein the server computer applies the
3 objective function to the histograms to identify the one or more differences.

1 ~~20.17.~~ The method of claim ~~18~~15, wherein comparing, ~~by the server~~
2 ~~computer,~~ the histograms to identify the one or more differences comprises
3 computing a difference between an area in each bin in the one or more second
4 histograms subtracted from an area in a corresponding bin in the one or more third
5 histograms.

1 ~~21.18.~~ The method of claim ~~18~~15, wherein the rules are associated with
2 the one or more variables, the one or more histograms are associated with a first
3 variable, of the one or more variables, and the method further comprises repeating
4 steps a) – d) with the one or more histograms associated with a second variable, of
5 the one or more variables.

1 ~~22.19.~~ The method of claim ~~18~~15, wherein the one or more variables
2 comprise one or more of: a transaction amount, a geographical area, a transaction
3 channel, or a time period.

1 ~~23.20.~~ The method of claim ~~17~~15, wherein the client computer
2 transmits the first rule and the second rule to the server computer via an application
3 programming interface (API) exposed to the client computer by the server computer.

1 ~~24.21.~~ The method of claim ~~17~~15, wherein the events are transactions,
2 the first classification comprises fraudulent transactions, and the second
3 classification comprises non-fraudulent transactions.

1 ~~25.22.~~ A system comprising:
2 a client computer comprising:

3 a processor; and
4 a non-transitory computer-readable medium comprising code,
5 executable by the processor, to implement a method comprising:
6 i) transmitting, by the client computer to a server computer, a first
7 rule comprising one or more variables, the first rule configured to predict that an
8 event is either a first classification or a second classification, wherein the client
9 computer comprises an automatic rule generator;
10 ii) receiving, by the client computer from the server computer, data
11 relating to performance of the first rule, wherein the server computer generated the
12 data relating to the performance of the first rule by applying the first rule to an initial
13 data set of events, each event associated with the first classification or the second
14 classification, to identify events that are associated with the first classification and
15 evaluating the performance of the first rule;
16 iii) automatically evaluating, by the client computer, the
17 performance of the first rule, wherein evaluating the performance of the first rule
18 comprises:
19 a) generating one or more first histograms based upon the initial
20 data set of events, the one or more first histograms associated with one more
21 variables, each first histogram containing a plurality of bins defined by boundaries
22 such that each bin contains an equal number of events;
23 b) generating one or more second histograms by binning the
24 identified events associated with the first classification according to the boundaries;
25 c) generating one or more third histograms by binning events in the
26 initial data set of events associated with the first classification according to the
27 boundaries; and
28 d) comparing the one or more second histograms with the one or
29 more third histograms to identify one or more differences;
30 iv) generating, by the client computer, a second rule in response to
31 the data relating to the performance of the first rule;
32 v) transmitting, by the client computer to the server computer, the
33 second rule;
34 vi) receiving, by the client computer from the server computer, data
35 relating to the performance of the second rule;

vi) automatically evaluating, by the client computer, the performance of the second rule; and
vii) generating, by the client computer, a third rule in response to the data relating to the performance of the second rule.

~~26. The system of claim 25, wherein evaluating, by the server computer, the performance of the first rule comprises:~~

~~a) generating, by the server computer, one or more first histograms based upon the initial data set of events, the one or more first histograms associated with one or more variables, each first histogram containing a plurality of bins defined by boundaries;~~

46 b) ~~generating, by the server computer, one or more second~~
47 ~~histograms by binning the identified events associated with the first classification~~
48 ~~according to the boundaries;~~
49 c) ~~generating, by the server computer, one or more third~~
50 ~~histograms by binning events in the initial data set of events associated with the first~~
51 ~~classification according to the boundaries; and~~
52 d) ~~comparing, by the server computer, the one or more second~~
53 ~~histograms with the one or more third histograms to identify one or more differences.~~

1 27.23. The system of claim 2622, further comprising transmitting, by
2 the client computer, an objective function, wherein the server computer applies the
3 objective function to the histograms to identify the one or more differences.

1 28.24. The system of claim 2622, wherein comparing, ~~by the server~~
2 ~~computer,~~ the histograms to identify the one or more differences comprises
3 computing a difference between an area in each bin in the one or more second
4 histograms subtracted from an area in a corresponding bin in the one or more third
5 histograms.

1 29.25. The system of claim 2622, wherein the rules are associated with
2 the one or more variables, the one or more histograms are associated with a first
3 variable, of the one or more variables, and the method further comprises repeating
4 steps a) – d) with the one or more histograms associated with a second variable, of
5 the one or more variables.

1 30.26. The system of claim 2522, wherein the client computer transmits
2 the first rule and the second rule to the server computer via an application
3 programming interface (API) exposed to the client computer by the server computer.