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(71) Applicant *(for all designated States except US)*: **HIGH-EDGE, INC.** [US/US]; 6165 Greenwich Drive, Suite 320, San Diego, CA 92122 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **ROSE, Robert** [US/US]; 9575 Genessee Ave., Apt. A1, San Diego, CA 92121 (US). **MATTHEWS, Camille** [US/US]; 5014 Nw Francis Drive, Silverdale, WA 98383 (US). **HUNG, Kelvin** [US/US]; 5510 Adelaide Ave., Unit 9, San Diego, CA 92115 (US). **WILES, Jeremy** [US/US]; 9547 Caminito Toga, San Diego, CA 92126 (US).

(74) Agent: **BAILEY, David, J.**; Kauth, Pomeroy, Peck & Bailey LLP, P.O. Box 19152, Irvine, CA 92623 (US).

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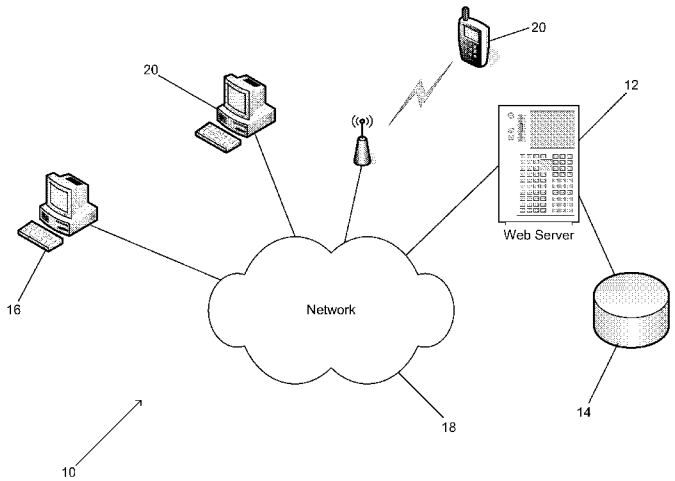

FIG. 1

(57) Abstract: Systems for collecting votes that modify the weighting applied to each vote based upon a number of factors including the identity of the voter are disclosed. One embodiment of the invention includes a server connected to a network, a database connected to the server and a voter computer connected to the network. In addition, the server is configured to provide a plurality of options to the voter computer, the voter computer is configured to register with the server using a profile and to communicate a current selection from one of the options to the server, the database stores information concerning past activity associated with a voter profile and the server is configured to determine the value of the vote as a function of at least one factor indicative of stored information concerning the past activity associated with the voter profile.

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SYSTEM AND METHOD FOR VOTING IN ONLINE COMPETITIONS

BACKGROUND

[0001] The present invention relates generally to voting and more specifically to detecting attempts to cast votes in violation of a set of voting rules and modifying the value attributed to individual votes based upon the past and current behavior of the voter.

[0002] The Internet enables the rapid exchange of information over vast distances. The potential of the Internet to reach a large audience has prompted many people to use the Internet to conduct competitions and surveys. In a number of instances a competition or a survey is posted upon an interactive web site and visitors to the web site can cast votes or select between different options for responding. The votes and responses can then be tallied and the information used for a variety of purposes including determining the winner of the competition, a finalist for the competition or the most popular survey response.

[0003] A problem that can be encountered when conducting a competition or a survey via the Internet is the potential for a person to submit multiple votes or responses and unfairly influence the outcome of the competition or survey. Many interactive web sites (such as Bopsta.com) require users to establish a profile in order to participate in a competition or survey and in order to limit the number of votes that can be cast by a user. The limit can be an absolute limit or a limit on the number of votes that can be cast within a predetermined time period. Despite the limits placed on the number of votes a user can cast using a single profile, most sites do not prevent an individual from establishing multiple profiles and submitting a vote or a survey response from each profile. Several sites do not require a user to login, preferring a CAPTCHA to verify that a human and not a machine is casting a vote. Sites that use CAPTCHA verification often log the IP address of the voter and prevent recurrent votes from the same IP address.

SUMMARY OF THE INVENTION

[0004] Systems and methods are enabling people to vote online are disclosed that involve detecting attempts to violate voting rules and attributing different values to each vote as a function of information collected concerning the person that cast the vote. In many embodiments, the value of each vote is impacted by a voter's previous violations of the voting

rules. In a number of embodiments, the value of each vote is impacted by a variety of factors including the reputation of the voter, the activities of a voter with respect to a web site or online community, and/or the extent to which a voter propagates information across the Internet. In other embodiments, other factors that reward behavior that positively impacts an online community and/or that discourage behavior that is detrimental to an online community are used in determining the value to attribute to a vote.

[0005] One embodiment of the invention includes a server connected to a network, a database connected to the server and a voter computer connected to the network. In addition, the server is configured to provide a plurality of options to the voter computer, the voter computer is configured to register with the server using a profile and to communicate a current selection from one of the options to the server, the database stores information concerning past activity associated with a voter profile and the server is configured to determine the value of the vote as a function of at least one factor indicative of stored information concerning the past activity associated with the voter profile.

BRIEF DESCRIPTION OF DRAWINGS

[0006] FIG. 1 is a schematic diagram showing a system for hosting online competitions.

[0007] FIG. 2 is a flow chart showing a process for conducting a competition involving online voting in which each vote is given a value that is based upon information known about the source of the vote in accordance with an embodiment of the invention.

[0008] FIG. 3 is a flow chart showing a process for detecting a violation of a voting rule prohibiting the casting of multiple votes within a predetermined time period in accordance with an embodiment of the invention.

[0009] FIG. 4 is a flow chart showing another process for detecting a violation of a voting rule prohibiting the casting of multiple votes within a predetermined time period in accordance with an embodiment of the invention.

[0010] FIG. 5 is a flow chart showing a process for attributing values to votes according to information known about a voter in accordance with an embodiment of the invention.

[0011] FIG. 6 is a flow chart showing a process for calculating a value to give to a vote in accordance with an embodiment of the invention.

[0012] FIG. 7 is a flow chart showing a process for calculating a cheating factor in accordance with an embodiment of the invention.

[0013] FIG. 8 is a flow chart showing a process for calculating a reputation factor in accordance with an embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0014] Turning now to the drawings, systems for collecting votes in online competitions and survey responses in accordance with embodiments of the invention are disclosed. The systems enable voters to cast a vote or provide a survey response. Instead of attributing equal weight to each vote or response, the impact of each vote on the overall score is based upon any of a number of factors that are typically related to the identity of the voter and information collected about the voter. In several embodiments, the systems detect attempts by a voter to violate voting rules. Violations of voting rules are recorded and can be one factor used when determining the value that should be given to a vote or survey response. In many embodiments, the voter's positive involvement with a competition, survey or broader online community is another factor that is considered when determining the value given to a vote or survey response. In a number of embodiments, factors considered when determining the value of a vote or survey response include the number of times a voter has legitimately voted for or responded to a survey, the number of selections viewed and/or engaged with when casting a vote, and the user's efforts to propagate a selection or competition throughout the Internet. Although many of the embodiments presented below are discussed with respect to the tallying of votes, the systems and methods described herein are equally applicable in any application that involves tallying user responses. As a result, any reference to voting should be considered to include submitting a vote and any other submission involving a choice between a number of options and/or the ranking, rating and/or scoring of a submission.

[0015] An online voting system in accordance with an embodiment of the invention is shown in FIG. 1. The system 10 includes a web server 12 connected to a database 14. The server 12 also communicates with a voter computer 16 via a network 18. Both the server 12 and the voter computer 16 can communicate with a number of member computers 20 via the network 18.

[0016] In a number of embodiments, the web server 12 hosts an interactive site that solicits selections between a number of options. In many embodiments, the selection can involve casting

a vote between a number of different candidates. In several embodiments, the selection involves submitting an answer to a survey question. In a number of embodiments, the web server 12 hosts an interactive site that solicits ranking, rating and/or scoring of candidates. A group of embodiments include at least one voting rule and the server 12 is configured to detect violations of voting rules. A number of different examples of voting rules and techniques for detecting violations of voting rules are discussed below.

[0017] A voter can use a voter computer 16 to submit a selection and/or ranking. Voter computers are typically computing devices such as personal computers, mobile phone handsets and consumer electronics devices that are capable of connecting to a data network and viewing data via a browsing application. The server 12 is configured to receive votes from voter computers and to attribute values to each vote according to information about the voter stored in the database. In many embodiments, information concerning the voting history of the voter and the voter computer is recorded in the database. In several embodiments, information concerning the reputation of the voter, interactions between the voter and the web site, and efforts by the voter to propagate the opportunity to vote to other locations throughout the Internet are recorded in the database. Propagation is an example of one-to-many viral distribution of content that typically involves posting the content on another website. Propagation is discussed in more detail in U.S. Provisional Application Serial No. 60/958,219 entitled "Online Content Marketing Platform" to Rose et al., filed on July 3, 2007, the disclosure of which is incorporated by reference above. As is discussed below, any factors related to the source of the vote can be used to determine the value of a vote using any appropriate function of the factors in accordance with embodiments of the invention.

[0018] In many embodiments, individual votes are recognized due to the server requiring the voter to register using a voter profile prior to casting a vote. Activity associated with the voter profile can be stored in the database 14 and used when determining the impact of a vote on a total score.

[0019] In the illustrated embodiment, a number of member computers 20 are connected to the network. Members of an online community can use the member computers to interact with each other and to interact with the interactive site hosted by the server 12. In many embodiments, information concerning interactions between a voter and other members of an

online community is stored in the database 14 and the information is another factor that can be considered when determining the value of a user's vote.

[0020] Although a specific architecture is shown above with respect to FIG. 1, a number of different architectures can be used to receive voter selections, detect violations of the voting rules and to determine the value to give to a vote in accordance with embodiments of the invention. For example, the Online Marketing Platforms disclosed in U.S. Provisional Patent Application Serial No. 60/958,219 entitled "Online Marketing Platform" to Rose et al., filed on July 3, 2007, can be used to implement a voting system in accordance with embodiments of the invention.

[0021] A process for conducting a competition in accordance with an embodiment of the invention is shown in FIG. 2. The process 30 includes commencing (32) the competition, receiving (34) votes until the competition has ended. When a vote is received, the source of the vote is identified (36). In many embodiments, the identity of the source of the vote is determined using an address associated with the voter that can be derived from the transmission used to communicate the vote. In several embodiments, the source of the vote is identified using an IP address. In many embodiments, a voter must log in using a user profile or guest profile and the profile is used to identify the source of the vote. Once the source of the vote has been identified, information concerning the source can be retrieved and used to both determine (37) whether the vote constitutes a violation of the voting rules and to determine (38) the value to give to the source's vote. In a number of embodiments, a vote that violates the voting rules is rejected (i.e., effectively assigned a weighting of zero). In other embodiments, a vote that is cast in violation of the voting rules is not rejected outright. Instead, the violation is recorded on the voter's voting record, which negatively impacts the value of the current vote and future votes cast by the voter. The receipt and weighting of votes continues until the competition is determined (40) to be over. When the competition is over, the weighted votes can be tallied to determine a "winner" of the vote. In other embodiments, multiple "winners" are selected based upon the tallied vote. In many embodiments, there are no "winners" or "winners" are determined based on factors that may or may not include the tallied vote. As discussed above, the method outlined in FIG. 2 is also applicable in applications that do not involve competitions, but involve tallying selections of one of a number of options by respondents.

[0022] The processes used to detect attempts to violate voting rules or "cheat" depend upon the nature of the voting rules. In many embodiments, the voting rules include a restriction on the number of votes that can be cast within a specified time period. In embodiments where a web site includes multiple competitions, voters are often able to cast votes in a number of different competitions, but voting rules limit the number of votes they can cast with respect to a single entry in the competition within a specified time period. In other embodiments, other voting rules limit the manner in which votes can be cast and/or the ranking, rating and/or scoring of individual submissions.

[0023] A process for detecting attempts to violate voting rules limiting the number of votes that can be cast by a voter with respect to a selection within a specified time period is shown in FIG. 3. The process 50 includes detecting (52) the identity of the voter and determining (54) whether the voter has cast the same vote previously. In many embodiments, the identity of the voter is determined by extracting information from a cookie on the voter's browser application. A cookie can be placed in the browser during a first visit by the voter and used to detect repeat visits, even if the voter changes user accounts. As is discussed further below, other techniques can be used to identify the user. When the voter has not cast the same vote previously, then the process terminates. When the voter has cast the same vote previously, then the process determines (56) whether the time between the current vote and the most recent vote is less than the specified period. When the time is not less than the specified period, then the process terminates. When the time is less than the specified period, then a violation of the voting rules is detected (58). The time period and the number of identical votes required to be flagged as a violation of the voting rules can vary depending upon observed voting patterns and the requirements of an application.

[0024] Another process for detecting attempts to violate voting rules limiting the number of votes that can be cast by a voter with respect to a selection within a specified time period is shown in FIG. 4. The process 60 includes detecting (62) the identity of the voter. The identity of the voter is detected using a network address to prevent attempts to violate voting rules by using different user accounts from the same voter computer. Each time a voter logs on to a site, the IP address of the voter and the time of the login can be detected. A determination (64) is made as to whether a predetermined minimum number of consecutive logins have occurred from

different accounts having the same IP address. When the predetermined minimum number of logins from different accounts having the same IP address has not occurred, then the process terminates. The number of logins is typically determined based upon observed patterns of voter behavior and the requirements of the application.

[0025] When the predetermined minimum number of logins from different accounts having the same IP address has occurred, a determination (66) is made as to whether each of the logins occurred over a predetermined time period. When the logins occurred over a period longer than the predetermined time period, then the process terminates. When the logins occurred within the predetermined time period, then a determination (68) is made as to whether identical votes were cast from any two of the accounts. When identical votes were not cast, then the process terminates. When identical votes were cast, then a violation of the voting rules is detected (70). The parameters used in a process designed to detect violations of voting rules can be modified as observations are made concerning attempts to violate voting rules. For example, more than two identical votes could be required for a violation of the voting rules to be found.

[0026] A variety of other processes can also be used in determining whether a vote constituted a violation of voting rules. For example, a voter computer can include a unique CPUID that is used to determine whether a single user is using multiple accounts to cast multiple votes in violation of voting rules. In many embodiments, the system monitors logins from blocks of IP addresses controlled by an ISP as opposed to monitoring a single IP address. In several embodiments, geographic location can be used to monitor voting patterns and prevent abuses such as paying voters in low wage countries to vote on behalf of a particular selection (i.e. activity analogous to "gold farming" in MMORPGs). In a number of embodiments, communication between users and voting patterns can be monitored to detect vote swapping by users. For example, reviews and/or comments could be automatically scanned to detect activity indicative of vote swapping.

[0027] Systems in accordance with embodiments of the invention not only detect attempts to violate voting rules, but are able to diminish the value of future votes cast by voters that attempt to violate voting rules. In many embodiments, a number of different factors are used in determining the value attributed to each vote and the factors are chosen to encourage certain behaviors and discourage other behaviors. Examples of behaviors that an administrator might

wish to encourage are active positive participation in an online community, review of many selections prior to casting a vote, a diversity of activity, active social participation (i.e., having many friends), and propagating information to other web sites to increase the reach of a poll, survey or competition.

[0028] A process for determining the value of a selection in accordance with an embodiment of the invention is shown in FIG. 5. The process 80 includes determining (82) whether any information is known concerning the source of the selection. When no information is known about the source, a default value is selected (84) and a voting record can be established concerning the source. When information is known concerning the source, a vote value is selected (86) based upon information collected about the source and the vote can be added to the source's voting record. The selection's value is then added (88) to the voting tally.

[0029] As can readily be appreciated, the processes used to determine the value attributed to a vote are entirely dependent on the actions that the operator of an interactive site wishes to encourage and the actions the operator of the site wishes to discourage. A process for determining a value to give to a vote using information concerning a voter is shown in FIG. 6. The process 90 includes determining (92) a voter cheating factor from information concerning past violations of the voting rules by the voter, determining (93) an activeness factor based upon the amount of activity that the voter has performed within an online community, determining (94) a voter reputation factor based upon information concerning the diversity of a voter's activities within an online community and the number of friends the voter has within the community, determining (95) a support factor based upon the number of times the voter has voted for a particular selection, determining (96) a propagation factor based upon the number of times the voter has propagated and/or engaged with propagated content and using each of these factors to determine (97) the value to be give to the vote in accordance with a predetermined formula.

[0030] The various factors determined in the process outlined above are simply values that are determined from information maintained about a voter. These factors can then be combined into a formula using any of a variety of functions that are designed to encourage particular activity and discourage other activities according to the significance of the activity. In many embodiments, the formula is a product of various factors. In several embodiments, the formula

is a weighted sum of the factors. In a number of embodiments, the formula is a combination of products and sums of the factors. In many embodiments, a single factor or multiple factors are included in the formula and the factors included in the formula are not limited to those factors described above. Other factors that can be considered include factors that reflect the extent to which votes are received from a diverse group of voters (i.e. as opposed to a small number of voters casting repeated votes), the pier review activity rating of activity (i.e. activity receiving favorable pier reviews increases the value of a vote), nested propagation (i.e. propagation from a propagated site), a voter's success in predicting the winner of previous campaigns, status awarded to the voter by the administrators of a web site, promotion of other user's entries, the number of selections reviewed prior to voting, the number of "internal" views (i.e. views from within the web site hosting the poll, competition or survey), and the number of "external" views (i.e. views from propagated sites).

[0031] As is discussed above, a cheating factor is one of a number of factors that can be considered in determining the value of a vote. The cheating factor can be used to incorporate a voter's propensity to violate voting rules into the value attributed to the vote cast by a voter. A process for determining a cheating factor in accordance with an embodiment of the invention is shown in FIG. 7. The process 110 includes (112) initializing a cheating factor and setting a timer. A determination (114) is then made as to whether a violation of the voting rules has been detected (see discussion above). When a violation is detected, the cheating factor is increased (116). When no violations of the voting rules are detected, the timer is compared (118) to a timer threshold. When the timer is not yet greater than the timer threshold, then the process continues to determine whether a violation of the voting rules has occurred. When the time is greater than the timer threshold, then the cheating factor is decremented (120).

[0032] The process described above with respect to FIG. 7 increases the cheating index of a voter in response to violations of the voting rules and rewards the voter for periods in which violations do not occur. In other embodiments, the rate at which the impact of a violation of the voting rules diminishes can be determined in accordance with the requirements of the application.

[0033] In general, the manner in which voter activity (either with respect to a single competition/survey or with respect to an online community more broadly) can be factored into

the value attributed to a vote depends upon the capability of a server to track voter activity and the number of associations that a voter has with other voters. U.S. Provisional Patent Application Serial No. 60/958,219 entitled "Online Marketing Platform" to Rose et al., filed on July 3, 2007, which is incorporated by reference above, describes systems for tracking user activity and relationships between users. In many embodiments, activities that influence the factors used to calculate the value of a vote include creating a user account, adding a blog entry to a profile, adding a picture to a profile, adding an album to a profile, adding a video to a profile, adding a series of videos to a profile, adding audio to a profile, rating another user's profile or content, voting, commenting on any aspect of another user's profile or content, nominating another user for an award, receiving an award based upon other user's nominations, logging in to the site, updating a profile, referring a friend to the site, having the friend sign up, and/or reporting abuse. The factors that determine the value of a vote can also be decreased for activity that is perceived as detrimental. For example, many embodiments include a reputation factor that is reduced in response to a report of abuse. In a number of embodiments, diversity of activity is rewarded. For example, reputation index is increased by voting for a number of different selections, reviewing a number of different selections, and viewing a number of different selections. In many embodiments, large amounts of activity centered on a small number of entries results in a reduced reputation factor due to the lack of diversity of activity. A reputation index can also be impacted by the number of friends that a voter has within an online community. The larger the number of friends the greater the reputation factor of the voter.

[0034] A process for determining a reputation factor in accordance with an embodiment of the invention is shown in FIG. 8. The process 130 includes converting (132) diversity of voter activity within an online community into a reputation factor score, converting (134) the number of associations a voter has with other voters into a reputation factor score and calculating (136) a reputation factor.

[0035] Although the above discussion refers to specific processes for determining a number of factors including cheating factor, activity factor and reputation factor. Similar processes can be used to determine other factors. As discussed above, many factors used to determine the value of a vote are simply numbers that reflect particular information collected about a voter, which is indicative of positive or negative behavior. Consequently, any process that

proportionately reflects the extent of the positive or negative behavior can be used to generate a factor for determining the value of a vote in accordance with embodiments of the invention.

[0036] While the above description contains many specific embodiments of the invention, these should not be construed as limitations on the scope of the invention, but rather as an example of one embodiment thereof. Accordingly, the scope of the invention should be determined not by the embodiments illustrated, but by the appended claims and their equivalents.

WHAT IS CLAIMED:

1. A system for collecting online votes, comprising:

a server connected to a network;

a database connected to the server; and

a voter computer connected to the network;

wherein the server is configured to provide a plurality of options to the voter computer;

wherein the voter computer is configured to register with the server using a profile and to communicate a current selection from one of the options to the server;

wherein the database stores information concerning past activity associated with a voter profile; and

wherein the server is configured to determine the value of the vote as a function of at least one factor indicative of the stored information concerning the past activity associated with the voter profile.

2. The system of claim 1, wherein:

the server is configured to provide a plurality of options to the voter computer in accordance with at least one voting rule; and

the information concerning past activity includes information indicative of attempts to violate at least one voting rule.

3. The system of claim 2, wherein the server is configured to disregard selections that violate any of the voting rules.

4. The system of claim 3, wherein:

at least one voting rule specifies a minimum allowed time between selections from the same set of options;

the server is configured to apply a time stamp to the current selection;

the information concerning the past activity associated with the voter profile includes a time stamp of the last time an identical selection to the current selection was made by a voter using the voter profile; and

the server is configured to determine whether the current selection constitutes a violation of the voting rules by comparing the minimum allowed time to the time difference between the time stamp of the current selection and the time stamp of the last identical selection.

5. The system of claim 4, wherein:

devices connected to the network posses an IP address; and

the server identifies the voter computer using the IP address of the voter computer.

6. The system of claim 4, wherein:

the voter computer is configured with a browser application that accepts cookies; and

the server is configured to provide a cookie that identifies the voter computer to the browser application.

7. The system of claim 1, wherein:

the server is configured to interact with the voter computer;

the server is configured to associate interactions with the voter computer with the voter profile in the database; and

at least one of the factors indicative of the stored information concerning past activity is indicative of the recorded interactions.

8. The system of claim 7, wherein:

the server is configured to determine a reputation factor using at least the recorded interactions associated with the voter profile; and

at least one of the factors indicative of the stored information concerning past activity is the reputation factor.

9. A method of tallying votes from a plurality of voter computers, comprising:

maintaining information concerning the activity of each voter computer at a server;

receiving a vote from one of the voter computers;

wherein the server verifies that the vote does not violate at least one voting rule;

wherein the server determines a value to attribute to the verified vote using a function of at least one factor that is indicative of the stored information concerning the activity of the voter; and

wherein the server adds the value of the vote to the tally.

10. A system for collecting online ratings, comprising:

a server connected to a network;

a database connected to the server; and

a user computer connected to the network;

wherein the server is configured to provide a candidate to the user computer;

wherein the user computer is configured to register with the server using a profile and to communicate a rating of the candidate to the server;

wherein the database stores information concerning past activity associated with a voter profile; and

wherein the server is configured to determine the value of the rating as a function of at least one factor indicative of the stored information concerning the past activity associated with the voter profile.

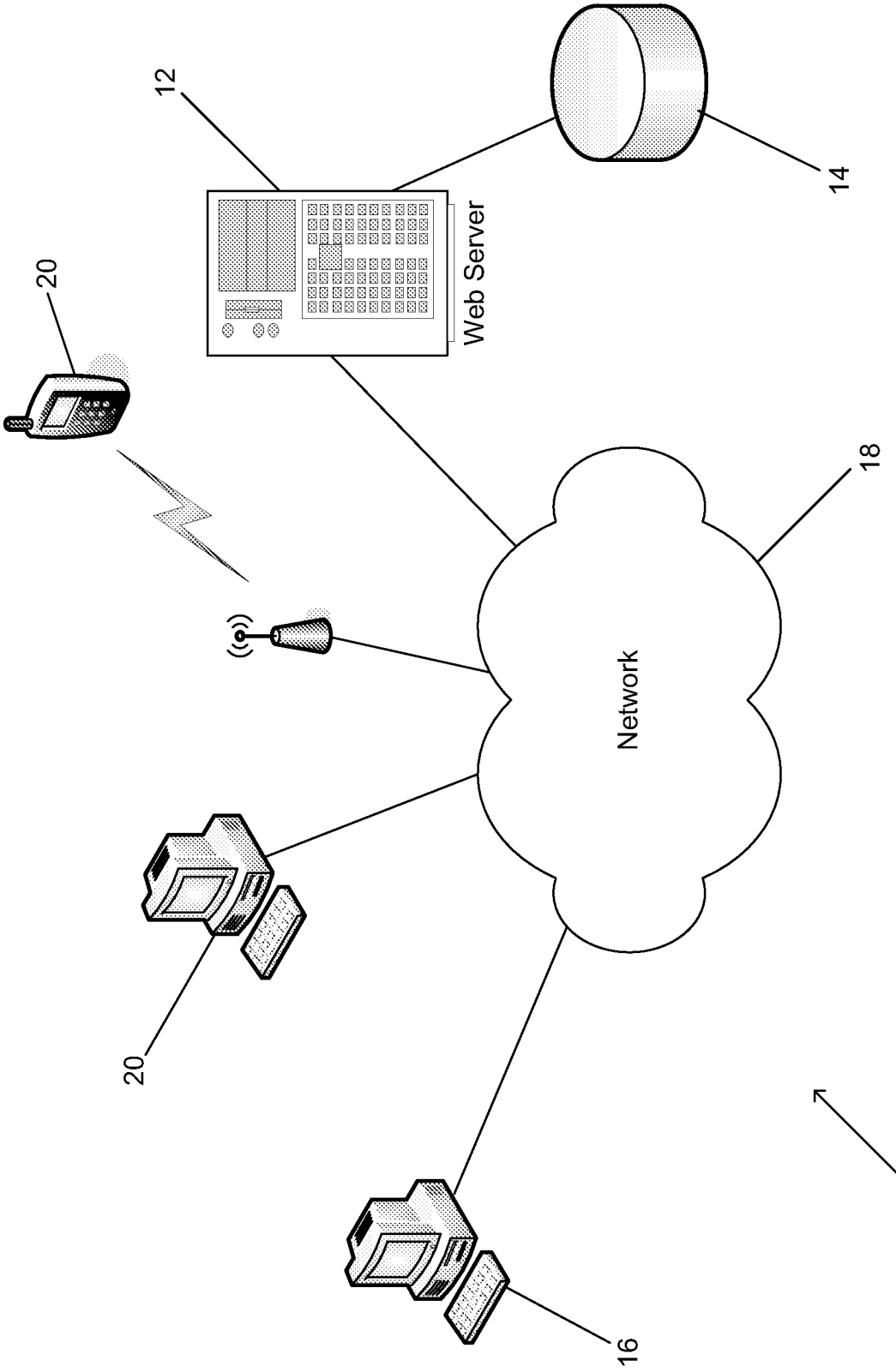

FIG. 1

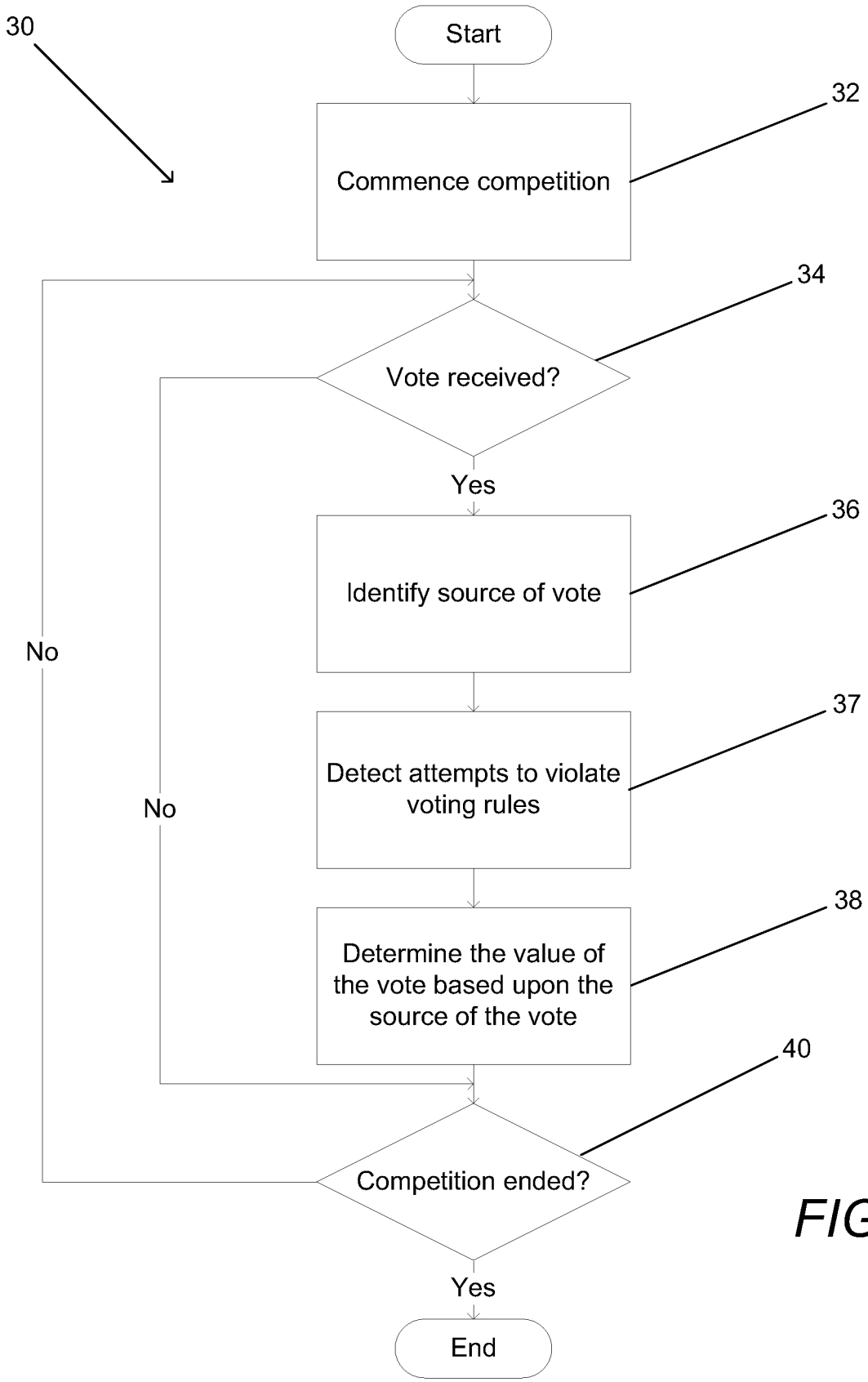
30
Start
32
Commence competition
34
Vote received?
Yes
No
36
Identify source of vote
37
Detect attempts to violate voting rules
No
38
Determine the value of the vote based upon the source of the vote
40
Competition ended?
Yes
End

FIG. 2

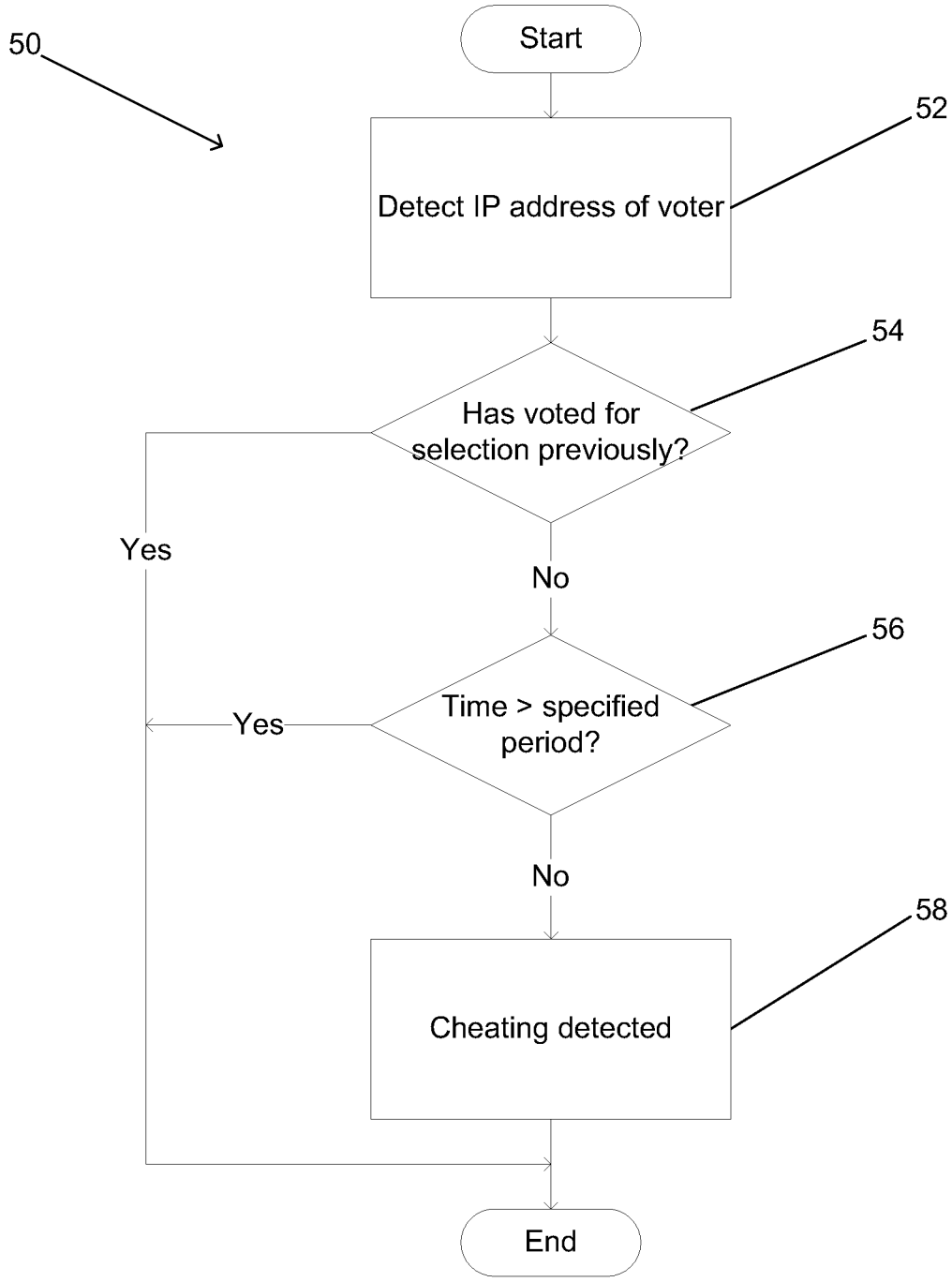
50
Start
52
Detect IP address of voter
54
Has voted for selection previously?
Yes
No
56
Time > specified period?
Yes
No
58
Cheating detected
End

FIG. 3

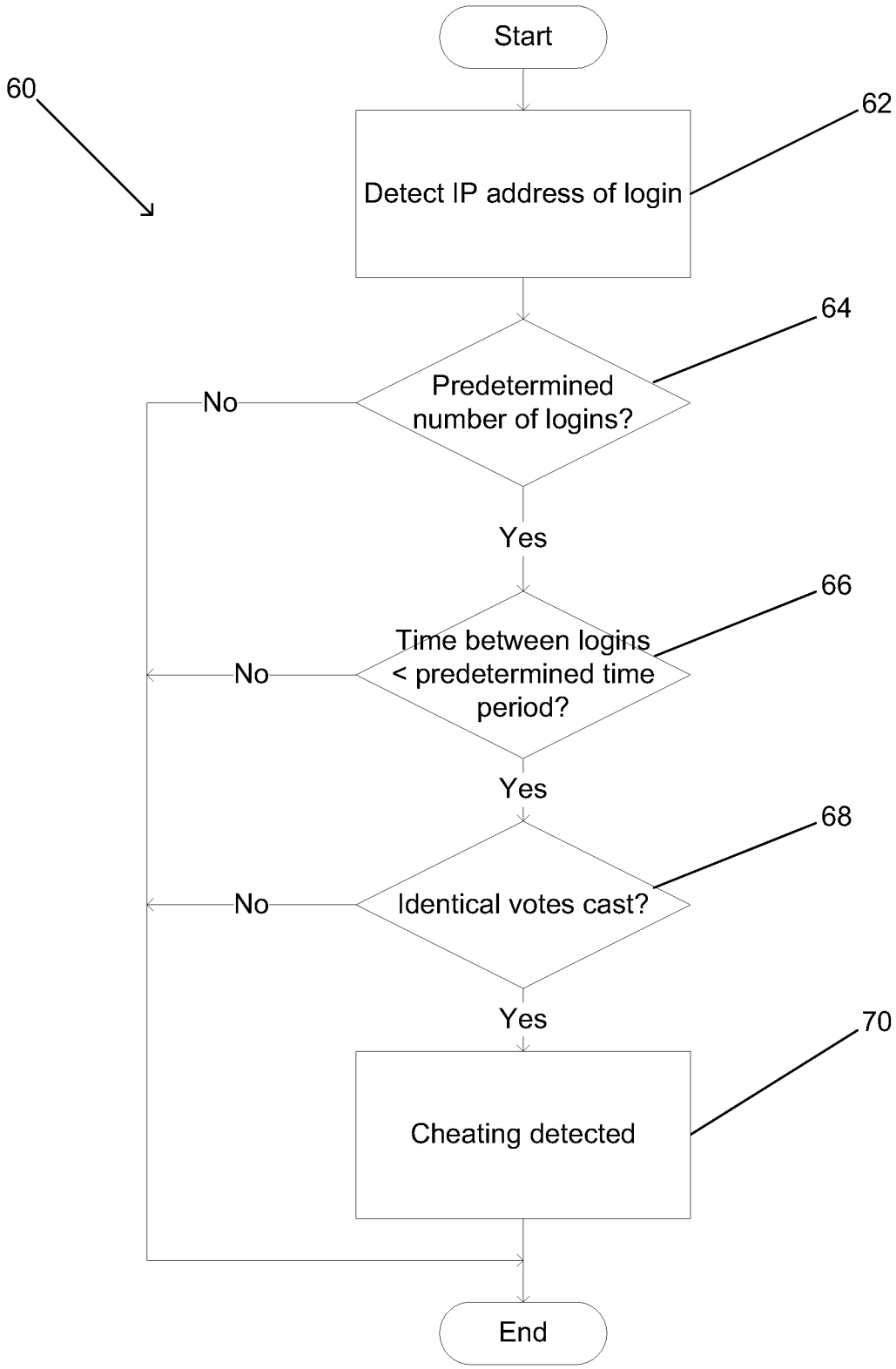
Start
60
62
Detect IP address of login
64
Predetermined number of logins?
No
Yes
66
Time between logins < predetermined time period?
No
Yes
68
Identical votes cast?
No
Yes
70
Cheating detected
End

FIG. 4

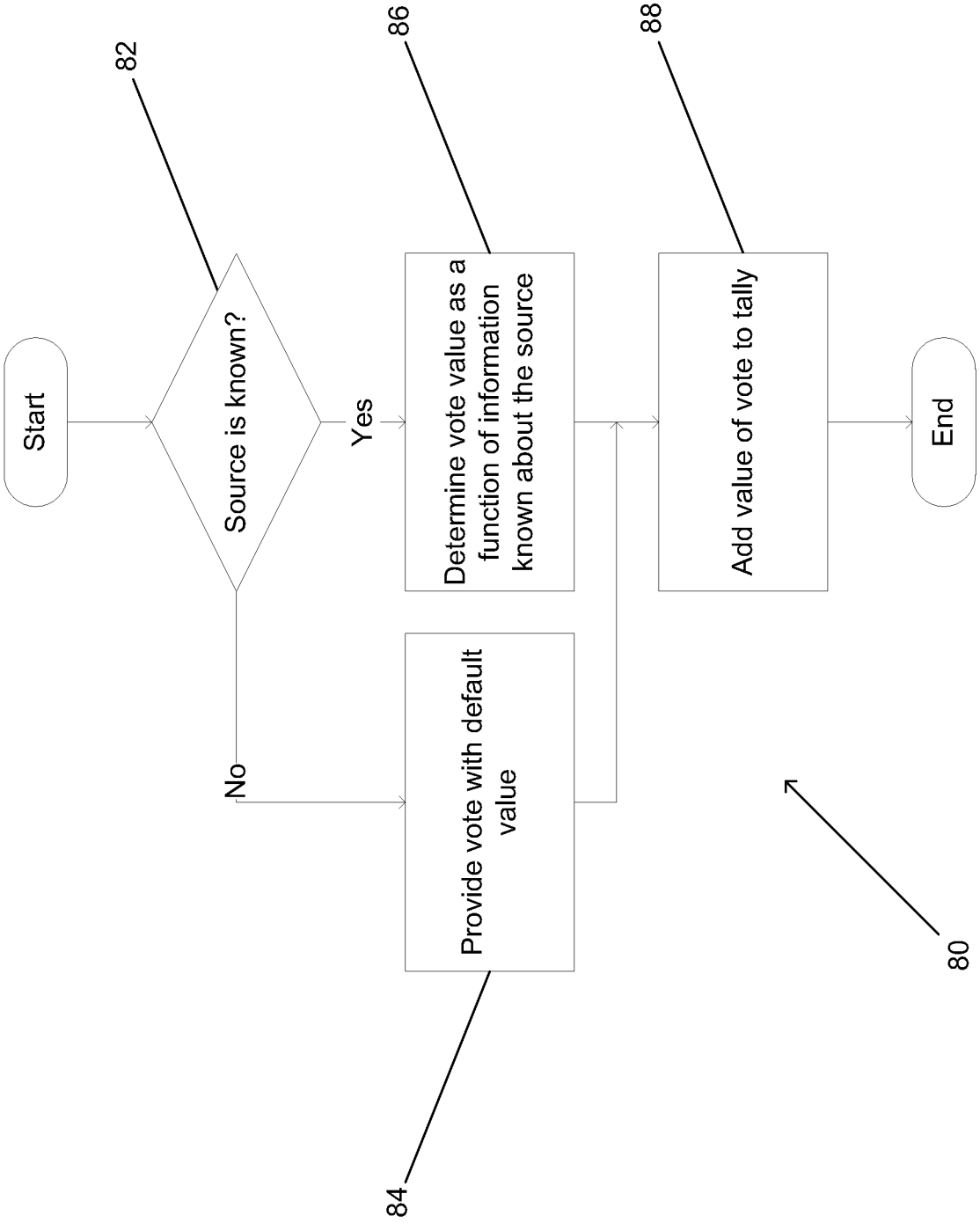
Start
Source is known?
82
Yes
No
Determine vote value as a function of information known about the source
86
Provide vote with default value
84
Add value of vote to tally
88
End
80

FIG. 5

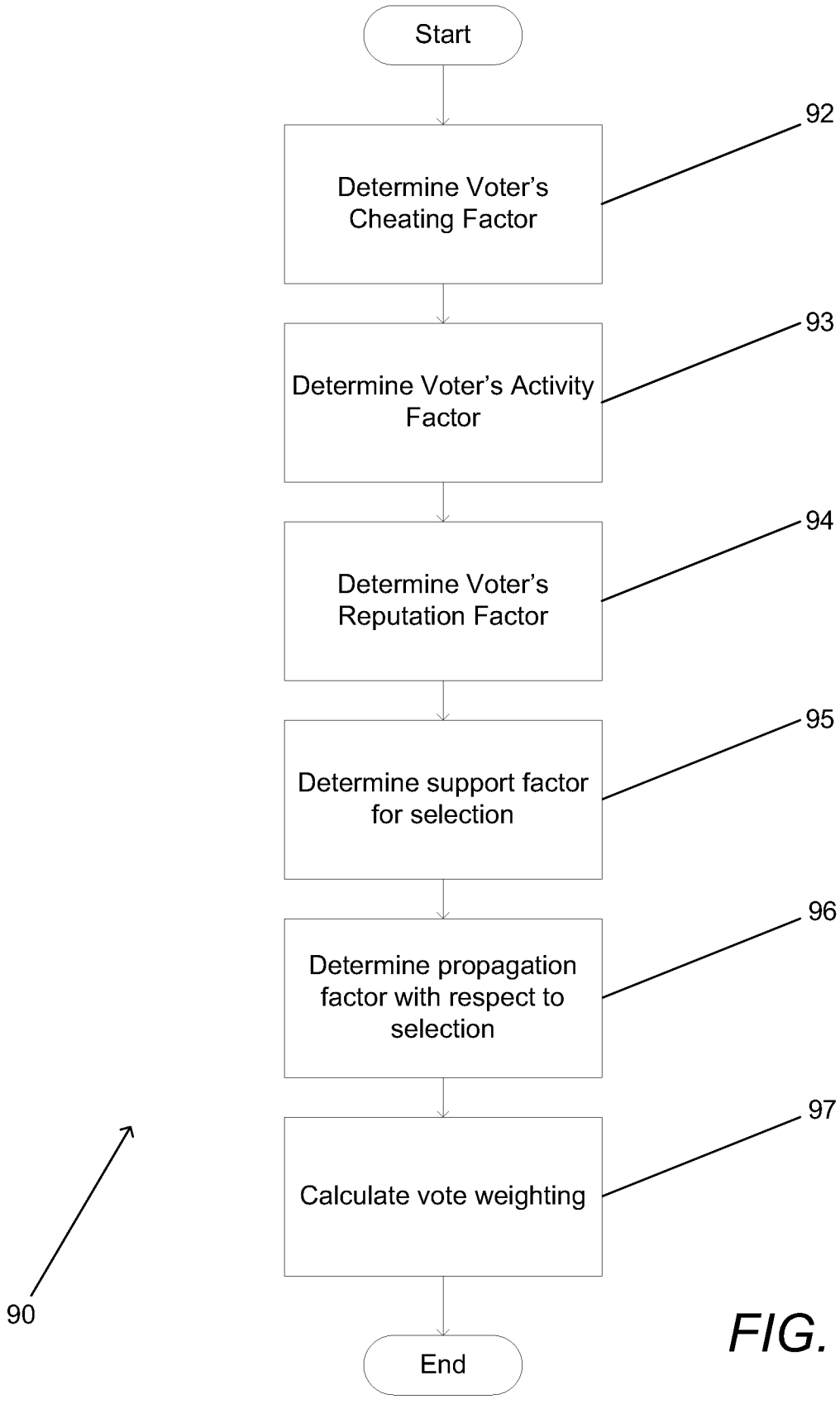
Start
Determine Voter's Cheating Factor
92
Determine Voter's Activity Factor
93
Determine Voter's Reputation Factor
94
Determine support factor for selection
95
Determine propagation factor with respect to selection
96
Calculate vote weighting
97
End
90

FIG. 6

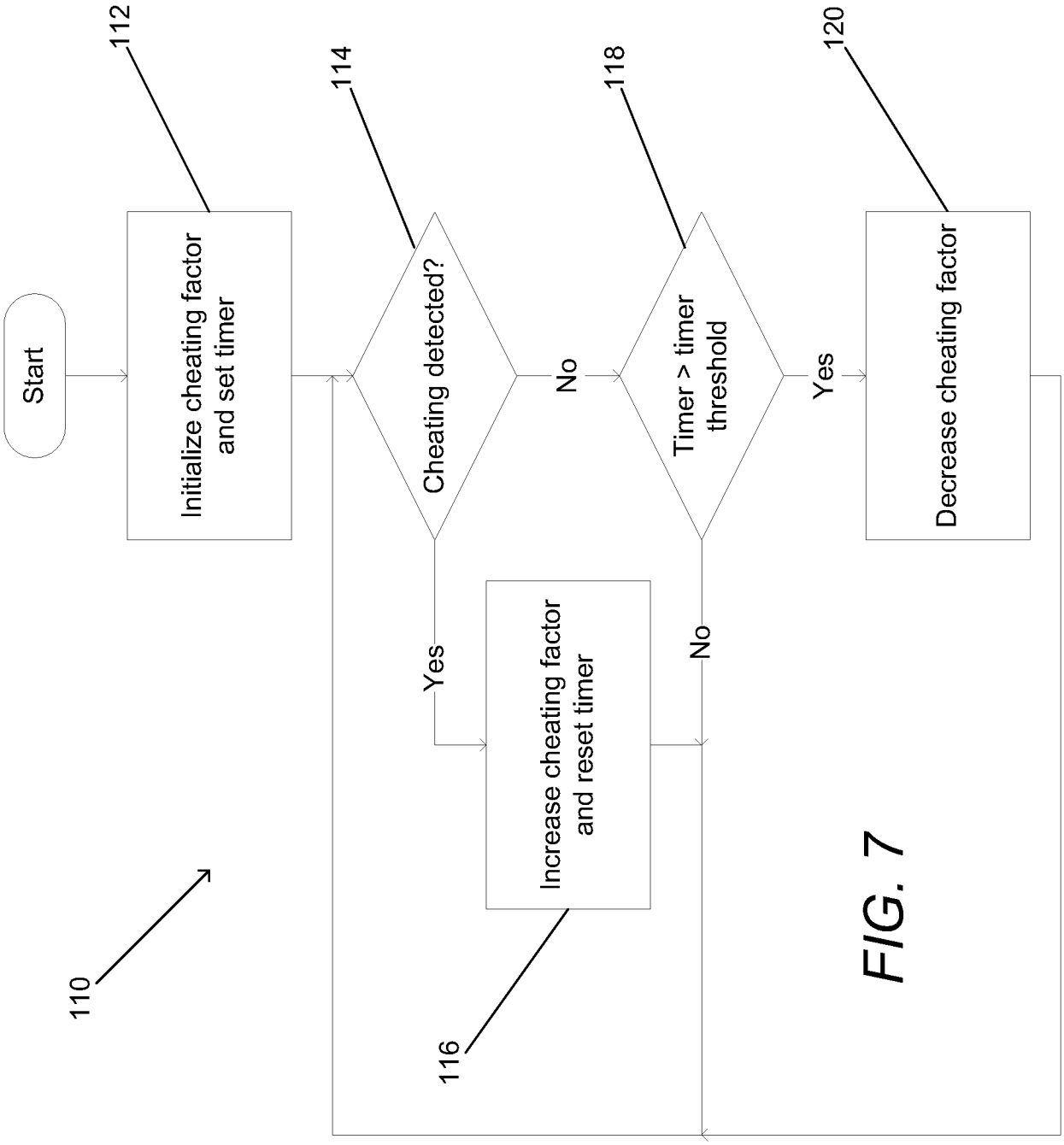
Start
Initialize cheating factor and set timer
112
Cheating detected?
114
Yes
Increase cheating factor and reset timer
116
No
Timer > timer threshold
118
Yes
Decrease cheating factor
120
No
110

FIG. 7

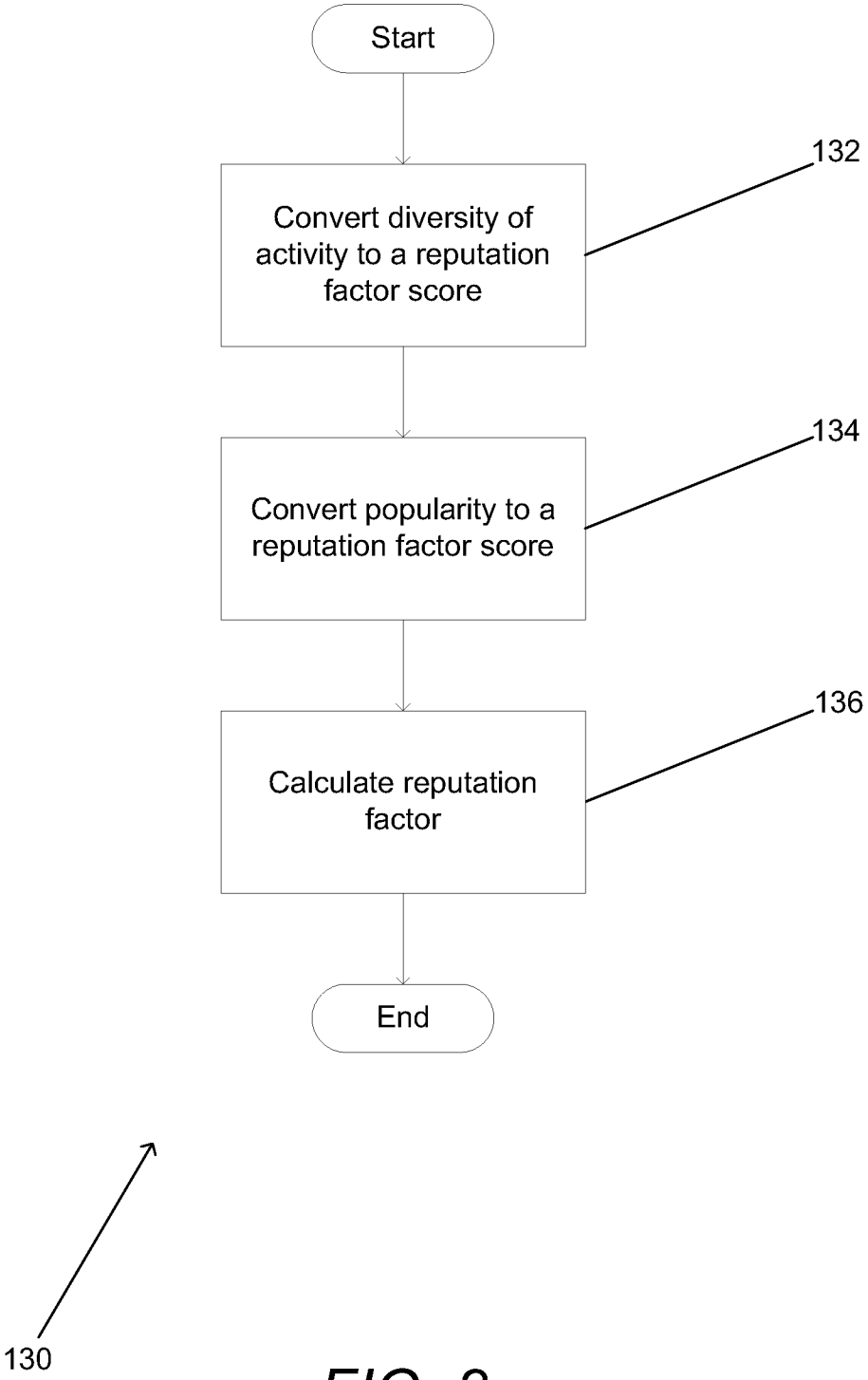
Start
Convert diversity of activity to a reputation factor score
132
Convert popularity to a reputation factor score
134
Calculate reputation factor
136
End
130

FIG. 8

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 08/69097

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G06F 11/00 (2008.04)
USPC - 705/12
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
USPC 705/12

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC 705/10; 705/1; 235/51; 235/386; 434/306

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWEST(USPT,PGPB,EPAB,JPAB); DialogPRO(Patents);Google Scholar
Search Terms: reputation, online votes, voting rule, violate, past activity, disregard, IP address, cookies, browser, online ratings.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2005/0044413 A1 (Elms et al.) 24 February 2005 (24.02.2005), entire document especially Fig 2f, 3, 4 and para [0011], [0012]); [0052], [0053], [0054], [0068], [0071], [0073], [0074], [0075], [0077], [0081].	1-10
Y	US 6,739,508 B2 (Ushioda et al.) 25 May 2004 (25.05.2004), entire document especially Figs 1,8 and col 4, ln 52-67, col 5, ln 1-12 col 5, ln 15-30 col 5, ln 46-64, col 6, ln 12-14, col 6, ln 24-54, col 9, ln 16-21	1-10

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
26 September 2008 (26.09.2008)	07 OCT 2008
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

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