

CLAIMS

What is claimed is:

1. A graph database based computer-implemented method of quantifying a relationship between a news story and a company disposed within a graph database, wherein each of the news story and company is associated with a discrete node in the graph database, the method comprising:

receiving a first user input from a user identifying a news story by way of an interactive graphical user interface;

receiving a second user input from the user identifying a company by way of the interactive graphical user interface;

receiving user-selectable criteria weighting factor input from the user by way of an interactive user adjustable graphical user interface object to directly set magnitudes of each of a plurality of weighting factors to link the first node and the second node in the graph database;

associating the news story and the company with respective discrete first and second nodes in a graph database via a processor by identifying a plurality of pathways that connect the first node and second node in the graph database based on the user-selectable criteria weighting factor input via the processor, wherein each criterion in the user-selectable criteria weighting factor input relates to a discrete relationship attribute;

computing a pathway score for each identified pathway in the plurality of pathways via the processor;

selecting a subset of the identified pathways based on a magnitude of the pathway score for each identified pathway based at least in part on the pathway score for each identified pathway;

generating output display data to be displayed on the interactive graphical user interface based on the subset of the identified pathways, the output display data graphically quantifying the relevance of the news story with respect to the company;

receiving further user input from the user selecting one of the identified pathways;
and

responsive to receiving said further user input, generating further output display data to be displayed on the interactive graphical user interface to display further information to quantify the impact of the news article on the company.

2. The graph based computer-implemented method of Claim 1, wherein the further output display data evidences at least one direct relevance linking the news story to the company and at least one hidden relevance linking the news story to the company.
3. The graph based computer-implemented method of Claim 2, wherein the further output display data evidences whether a person mentioned in the news story is or was associated with the company.
4. The graph based computer-implemented method of Claim 1, wherein:
generating the output display data includes computing a relevance score indicative of the relevance of the news story with respect to the company via the processor, wherein the relevance score is computed at least in part based on the pathway score computed for each pathway in the subset of identified pathways.
5. The graph based computer-implemented method of Claim 4, wherein
generating the output display data further includes generating a visual representation of the subset of identified pathways and first and second nodes and
the method further comprises displaying the visual representation of the subset of identified pathways and first and second nodes on the interactive graphical user interface.
6. The graph based computer-implemented method of Claim 1, wherein identifying the plurality of pathways that connect the first node and second node includes identification of at least one pathway that includes at least one further node in the graph database disposed between the first node and the second node.
7. The graph based computer-implemented method of Claim 1, wherein the user-selectable criteria weighting factor input relate to (i) an economic sector, (ii) an industry group, (iii) whether the company has a parent, (iv) whether the company has a subsidiary, (v) whether the company has a supplier, (vi) whether the company is a supplier for another entity, (vii) whether an individual is a board member or director of the company, (viii) whether the company is an insider organization, (ix) whether the company has an ultimate parent; (x) whether the company has a business relationship with another company, and (xi) whether the company and another company have a person in common.

8. The graph based computer-implemented method of Claim 1, wherein the pathway score for each of the identified pathways is computed based at least in part on at least one of the weighting factors.

9. The graph based computer-implemented method of Claim 1, wherein:

generating the output display data further includes generating a plurality of textual natural language sentences via processor, wherein each of said textual natural language sentences relates to a discrete pathway in the subset of identified pathways connecting the first node and the second node, wherein each said textual natural language sentence summarizes the subject matter of each respective pathway, the textual natural language sentence summarizing every step of every pathway between every node that connects the first node and the second node; and

the displaying step further includes displaying the textual natural language sentences in the interactive graphical user interface.

10. The graph based computer-implemented method of Claim 9, wherein a user can selectively highlight visual representations relating to each pathway in the subset of identified pathways.

11. The graph based computer-implemented method of Claim 10, wherein the user can selectively highlight visual representations of each pathway in the subset of identified pathways by hovering a cursor over the visual representation of a selected pathway.

12. The graph based computer-implemented method of Claim 11, wherein the visual representation of the selected pathway includes the rendering of the subset of identified pathways and first and second nodes.

13. The graph based computer-implemented method of Claim 12, wherein the visual representation of the selected pathway includes the textual natural language sentences.

14. The graph based computer-implemented method of Claim 15, wherein selectively highlighting the visual representation of a selected pathway causes the selected pathway to be highlighted in the rendering of the subset of identified pathways and first and second nodes, and also causes the corresponding textual natural language sentence in the graphical user interface to also be highlighted.

15. The graph based computer-implemented method of Claim 14, wherein the rendering of the subset of identified pathways and first and second nodes displays a plurality of intermediate nodes, and further wherein at least one of the pathways in the plurality of pathways traverses the plurality of intermediate nodes.

16. A graph based computer-implemented method of quantifying the relationship between a news story and a company not explicitly mentioned by the news story, wherein each of the news story and the company is associated with a discrete node in the graph database, the method comprising:

receiving a first input identifying the news story;

receiving a second input identifying the company not explicitly mentioned by the news story based at least in part on content derived from the news story;

associating the news story and the company with respective discrete first and second nodes in a graph database via a processor;

identifying a plurality of pathways that connect the first node and second node in the graph database based on user-selectable criteria via the processor, wherein each user-selectable criterion in the user-selectable criteria relates to a discrete relationship attribute, wherein the user-selectable criteria are assigned weighting factors that are selectively adjustable by a user;

selecting a subset of the identified pathways based on a path length of each identified pathway; and

generating output display data via processor illustrating the relationship between the news story and the company not explicitly mentioned by the new story based on the selected subset of the identified pathways.

17. A non-transitory computer readable medium storing a computer program to operate an online financial portfolio portal computer system comprising at least one processor, memory and a plurality of circuits to generate and display an interactive graphical user interface on a display, wherein the interactive graphical user interface presents a listing of a plurality of securities, each security relating to a company, wherein the computer program comprises instructions to:

receive a first input identifying a first company in the portfolio via processor;

receive a second input identifying a news story via processor, wherein the news story does not explicitly mention the first company;

associate the first company and the news story with respective discrete first and second nodes in a graph database via processor based at least in part on content from the news story;

receive user-selectable criteria weighting factor input by way of at least one interactive user adjustable graphical user interface object to directly set magnitudes of each of a plurality of weighting factors to link the first node and the second node in the graph database;

based on the user-selectable criteria weighting factor input, identify a plurality of pathways that connect the first and second nodes in the graph database wherein each user-selectable criterion in the user-selectable criteria weighting factor input relates to a discrete relationship attribute, wherein the user-selectable criteria weighting factor input are assigned weighting factors that are selectively adjustable by a user through the interactive graphical user interface;

compute a pathway score for each identified pathway in the plurality of pathways via processor;

select a subset of the identified pathways based on a magnitude of the pathway score for each identified pathway via processor; and

generate output display data based on the subset of the identified pathways that summarizes the relationship between the first company and the news story via processor.

18. The non-transitory computer readable medium of Claim 17, wherein the program further comprises instructions to display the output display data in the interactive graphical user interface via processor.

19. The non-transitory computer readable medium of Claim 17the interactive graphical user interface provides a first input field for receiving the first input from a user, and a second input field for receiving the second input from the user.

20. The non-transitory computer readable medium of Claim 17, wherein the user-selectable criteria weighting factor input relate to: (i) an economic sector, (ii) an industry group, (iii) whether the first company has a parent, (iv) whether the first company has a subsidiary, (v) whether the first company has a supplier, (vi) whether the first company is a supplier for another entity, (vii) whether an individual is a board member or director of the first company, (viii) whether the first company is an insider organization, (ix) whether the first company has an ultimate parent; (ix) whether the first company has a business

relationship with a second company, and (x) whether the first company and a second company have a person in common.

21. A non-transitory computer readable medium storing a computer program to operate an apparatus comprising a plurality of circuits to quantify the relationship between entities disposed within a graph database, wherein each entity is associated with a discrete node in the graph database, the program comprising :

instructions to receive a first input identifying a news story;

instructions to receive a second input identifying a company not explicitly mentioned by the news story based at least in part on content derived from the news story;

instructions to associate the news story and the company with respective discrete first and second nodes in a graph database via a processor;

instructions to identify a plurality of pathways that connect the first node and second node in the graph database based on user-selectable criteria via the processor, wherein each user-selectable criterion in the user-selectable criteria relates to a discrete relationship attribute, wherein the user-selectable criteria are assigned weighting factors that are selectively adjustable by a user;

instructions to compute a pathway score for each identified pathway in the plurality of pathways via the processor; and

instructions to select a subset of the identified pathways based on a magnitude of the pathway score for each identified pathway based at least in part on the pathway score for each identified pathway; and

instructions to generate output display data via processor illustrating the relationship between the news story and the company not explicitly mentioned by the new story based on the selected subset of the identified pathways.

22. A non-transitory computer readable medium storing a computer program to operate an apparatus comprising a plurality of circuits and at least one processor to quantify a relationship between a company and a news story, wherein each of the company and news story are associated with a discrete node in a graph database, the program comprising:

instructions to receive a first input identifying the company via the processor;

instructions to receive a second input identifying the news story via the processor, wherein the news story does not explicitly mention the company;

instructions to associate the company and the news story with respective discrete first and second nodes in the graph database via the processor based at least in part on content derived from the news story;

instructions to identify at least one pathway that connect the first node and second node in the graph database based on user-selectable criteria via the processor, wherein each user-selectable criterion in the user-selectable criteria relates to a discrete relationship attribute, wherein the user-selectable criteria are assigned weighting factors that are selectively adjustable by a user; and

instructions to compute a pathway score for each said at least one pathway via the processor.

23. The non-transitory computer readable medium of Claim 22, further comprising instructions to select a subset of identified pathways based on a magnitude of the pathway score for each identified pathway based at least in part on the pathway score for each identified pathway.

24. The method of Claim 1, wherein identifying the plurality of pathways that connect the first node and the second node include identifying a second company that is associated with the first company and the news story based on user-selectable criteria via the processor, the method further including:

associating the second company with a respective discrete third node in the graph database; and

generating the output display data including a visual representation of identified pathways that connect the first node, second node, and third node.

25. The method of Claim 1, wherein identifying the plurality of pathways that connect the first node and the second node include identifying an individual that is associated with the first company and the news story based on user-selectable criteria via the processor, the method further including:

associating the individual with a respective discrete third node in the graph database; and

generating the output display data including a visual representation of identified pathways that connect the first node, second node, and third node.