

WE CLAIM:

1. A computer-based system for generating a risk register relating to a named entity comprising:
 - a computing device having a processor in electrical communication with a memory, the memory adapted to store data and instructions for executing by the processor;
 - a risk database accessible by the computing device and having stored therein a set of risk types based on an induced taxonomy of risk types previously derived at least in part upon operation of a machine learning module;
 - an input adapted to receive a set of source data, the set of source data being in electronic form and representing textual content comprising potential risk phrases;
 - an entity-risk relation classifier adapted to identify and extract entity-risk relations from the set of source data, the entity-risk relation classifier comprising:
 - a risk tagger adapted to identify in the set of source data a set of risk candidates (r_i) based on the set of risk types; and
 - an entity tagger adapted to identify mentions of entity names (c_i) in the set of source data;
 - wherein the entity-risk relation classifier maps the identified set of risk types to the identified entity names using a set of purpose-defined features comprising a tree kernel and a linear vector kernel to generate a set of tuples;
[ENTITY _{c} ;RISK _{r}];
 - a filter adapted to filter the set of tuples by classifying the identified set of risk types and the identified entity names based on a statistical model using a set of training sentences to eliminate false positive tuples; and
 - a risk register aggregator adapted to generate a first risk register based on the set of tuples associated with a first entity, the first risk register comprising a set of risk relationships not previously marked in the set of source data and not previously stored in the risk database, the first risk register providing for generating by the computing device one or more risk alerts, processing by the

computing device risk searches and returning risk search results, and generating by the computing device risk visualizations.

2. The system of claim 1, wherein the identified names are stored in a entity index and the first risk register is associated with $ENTITY_{ci}$, defined as the set of all risks $1 \dots r \dots |R|$ where the entity index (c) is the same.
3. The system of claim 1, wherein the set of source data received comprises one or more of: an indexed search; a news archive; a news feed; structured data sets; unstructured data sets; social media content; regulatory filings.
4. The system of claim 1, wherein the entity-risk relation classifier maps the set of risk types to the entity names (i) in the set of source data to generate the set of tuples, the results comprising candidate risk exposure relationship tuples.
5. The system of claim 1 further comprising an output adapted to generate and transmit a risk alert in response to an update to the first risk register.
6. The system of claim 1 wherein the entity-risk relation classifier is adapted to map the set of risk types to a plurality of entity names ($c] \dots c_n$) to generate a plurality of sets of tuples ($t_j \dots t_n$) for each of the entity names and the risk register aggregator is further adapted to generate a plurality of risk registers ($rr] \dots rr_n$) respectively associated with entity names ($c] \dots c_n$) and sets of tuples ($t] \dots t_n$).
7. The system of claim 6, wherein the input is further adapted to receive a search query and to execute a risk search on the plurality of risk registers ($rr] \dots rr_n$).
8. The system of claim 6, further comprising:
 - a risk register database adapted to store the plurality of risk registers ($rr_1 \dots rr_n$); and
 - a search engine adapted to receive and execute a search query on the plurality of risk registers ($rr_1 \dots rr_n$).
9. The system of claim 1 further comprising a user interface module adapted to generate for display a risk visualization interface representing aspects of the risk register.

10. The system of claim 1 wherein the entity-risk relation classifier is adapted to identify and extract entity-risk relation mentions by using a set of purpose-defined features for risk sentence classification implemented as a Support Vector Machine (SVM).
11. The system of claim 10, wherein the Support Vector Machine (SVM) is trained and wherein the set of purpose-defined features is derived from a corpus of text to inform classification based on a machine learning process.
12. The system of claim 11, wherein the set of purpose-defined features includes a tree kernel.
13. The system of claim 1, wherein the entity-risk relation classifier further comprises:
a supply chain risk tagger adapted to identify supply chain relationships between one or more companies identified by the entity tagger and to identify in the set of source data a set of supply risk candidates (sr_i) based on a set of supply risk types associated with supply chain risks;
wherein the first risk register comprises a tuple representing a supply risk type.
14. The system of claim 12 further comprising a user interface module adapted to generate for display a risk visualization interface representing a supply risk type of the first risk register.
15. The system of claim 1 further comprising a risk presentation module adapted to automatically generate a representation of risk for inclusion in a user-defined document.
16. The system of claim 15, wherein the user-defined document is one of: an SEC filing; a regulatory filing; a power point presentation; a SWOT diagram; a supply-chain cluster diagram; editable text document.
17. The system of claim 1, wherein the entity is selected from one of the group consisting of: a company; and a person.
18. A method for generating a risk register relating to a named entity by a computer-based system, the method comprising:
receiving, by a computer, input from an indexed search and a news archive;

creating from the input, by the computer, a risk taxonomy with risk types by a machine learning module and storing the risk taxonomy in a risk database; identifying and extracting, by the computer, entity-risk relations from the indexed search and the news archive, the identifying and extracting, by the computer, comprising:

identifying, by a risk tagger executed by the computer, in the indexed search and the news archive a set of risk candidates (r_i) based on the set of risk types; identifying, by an entity tagger executed by the computer, mentions of entity names (c_i) for the named entity in the indexed search and the news archive; mapping, by the computer, the risk types and risk candidates to the mentions of the entity names for the named entity identified in the news archive using a set of purpose-defined features comprising a tree kernel and a linear vector kernel, the results comprising candidate risk exposure relationship tuples $[ENTITY_c; RISK_r]$;

filtering the mapping results, by the computer, to eliminate false positive tuples by classifying the risk types and the identified named entity based on a statistical model using a set of training sentences; and

generating, by the computer, in response to the identified tuples the risk register, the risk register comprising a set of risk relationships not previously marked in the input from the indexed search and the news archive and not previously stored in the risk database, a first risk register providing for generating by the computer one or more risk alerts, processing by the computer risk searches and returning risk search results, and generating by the computer risk visualizations.

19. The method of claim 18, further comprising generating a risk alert in response to an update to the risk register.

20. The method of claim 18, further comprising performing a risk search on the risk register.

21. The method of claim 18, further comprising displaying a risk visualization by representing aspects of the risk register.