

Exhibit B

EXHIBIT B

Parties Proposed Claim Constructions for Claim Terms in U.S. Patent No. 5,675,819

<u>Term</u>	<u>Plaintiffs' Proposed Construction</u>	<u>Plaintiffs' Support</u>	<u>Defendant's Proposed Construction</u>	<u>Defendant's Support</u>
thesaurus (claims 1, 25, 27, 28, 31)	A data structure that defines semantic relatedness between words. It is typically used in information retrieval to expand search terms with other closely related words. Even if the thesaurus is not explicitly computed, the mapping performed by query expansion explicitly defines a thesaurus.	Specification: “A thesaurus is a data structure that defines semantic relatedness between words. It is typically used in information retrieval to expand search terms with other closely related words. Even if the thesaurus is not explicitly computed, the mapping performed by query expansion explicitly defines a thesaurus.” (col. 1, lines 51-56).	a data structure that defines semantic relatedness between words	<p>“A thesaurus is a data structure that defines semantic relatedness between words.” (col. 1, lines 51-52).</p> <p>Extrinsic Evidence: <u>Testimony</u> (Schuetze Dep. 52:10, 52:13-53:17.) (Schuetze Dep. 55:21-56:17.) (Schuetze Dep. 65:18-66:2, 66:5-11.) (Schuetze Dep. 91:8-94:24.)</p>
the thesaurus (claims 1, 25, 27, 28, 31)	“the” simply refers to the “thesaurus” referenced earlier in the claims. See “thesaurus” above.	Plaintiffs do not believe that this term needs construction as “the” simply refers to the “thesaurus” referenced earlier in the claims. See “thesaurus” above.	Defendant no longer believes this limitation requires independent construction; however, if the plaintiffs maintain that it does and the Court construes this	<p>Specification: Claim 1 (col. 24, lines 38-56) (the antecedent basis for “the thesaurus” is “a thesaurus of word vectors based on lexical co-occurrence of words within documents of a corpus of documents”)</p>

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word vector (claims 1, 25, 27, 28, 31)	A representation corresponding to lexical co-occurrence patterns and relationships between words. The word vectors represent lexical co-occurrence patterns and relationships between word neighbors.	Specification: “The word vectors represent global lexical co-occurrence patterns and relationships between word neighbors.” (Abstract of the ‘819 Patent). “Words and documents are represented as vectors in the same multi-dimensional space that is derived from global lexical co-	limitation, the proper construction is: a thesaurus of word vectors based on lexical co-occurrence of words within documents in a corpus of documents a column or row of numbers with each number representing the number of times a particular word co-occurs with each other word within a range of words in a corpus of documents; also known as a	Extrinsic Evidence: <u>Testimony</u> (Schuetze Dep. 42:13-15, 43:11-19.) (Schuetze Dep. 52:10, 52:13-53:17.) (Schuetze Dep. 55:21-56:17.) (Schuetze Dep. 77:24-78:1, 78:3, 78:5-11.) (Schuetze Dep. 80:3-20.) (Schuetze Dep. 91:8-94:24.) Specification: “Words and documents are represented as vectors in the same multi-dimensional space that is derived from global lexical co-occurrence patterns.” (col. 4, lines 11-13). “[T]he lexical co-occurrence pattern of each word is presented as a multidimensional vector, the

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		occurrence patterns.” (col. 4, lines 11-13).	“thesaurus vector”	thesaurus vector.” (col. 4, lines 17-19). “This method of exploiting a lexical co-occurrence structure of words, i.e., forming a word’s vector representation from entries of its near lexical neighbors rather than from only itself is superior to conventional methods.” (col. 4, lines 23-26). “Each term of the documents is associated with a vector that represents the term’s pattern of local co-occurrences. This vector can then be compared with others to measure to co-occurrence similarity, and hence semantic similarity of terms.” (col. 6, lines 27-31). “Even if enough memory were found to represent the matrix C directly, the thesaurus vectors associated with each word (columns of the matrix C) would

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				<p>be v-dimensional." (col. 14, lines 55-57).</p> <p><u>Extrinsic Evidence:</u> Dictionaries ARRAY:</p> <ul style="list-style-type: none"> • "An n-dimensional ordered set of data items identified by a single name and one or more indices, so that each element of the set is individually addressable." GGL-0008143 (IEEE Standard Computer Dictionary, 1990). • "In programming, a list of data values, all of the same type." GGL-0008165 (Microsoft Press Computer Dictionary, 1991). • "In programming, a list of data values, all of the same type."); 81 ("column A series of items arranged vertically within some type of framework – for example, a continuous series

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				<ul style="list-style-type: none"> of cells running from top to bottom in a spreadsheet; ... or a set of data (text or numeric values) aligned vertically in a table, a mathematical array, or some other row-and-column type of matrix." GGL-0008174 (Microsoft Press Computer Dictionary, Second Edition, 1994). "[COMPUT SCI] A collection of data items with each identified by a subscript or key and arranged in such a way that a computer can examine the collection and retrieve data from these items associated with a particular subscript or key" GGL-0008149 (McGraw-Hill Dictionary of Scientific and Technical Terms, Fourth Edition, 1989). "[COMPUT SCI] A collection of data items with each identified by a subscript or key and arranged in such a way

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				<p>that a computer can examine the collection and retrieve data from these items associated with a particular subscript or key” GGL-0008157 (McGraw-Hill Dictionary of Scientific and Technical Terms, Fifth Edition, 1994).</p> <ul style="list-style-type: none"> • “SERIES OF DATA IN ROW OR MATRIX FORM; An ARRAY refers to a TABLE of adjacent FIELDS in a PROGRAM, which may be viewed and PROCESSED as a single row of DATA ELEMENTS or as a series of rows and columns (MATRIX).” GGL-0008137 (The Computer Glossary, 1983). <p>COLUMN</p> <ul style="list-style-type: none"> • “A series of items arranged vertically within some type of framework – for example, a continuous series of cells running from top to bottom in

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				<p>a spreadsheet; ... or a set of data (text or numeric values) aligned vertically in a table, a mathematical array, or some other row-and-column type of matrix." GGL-0008166 (Microsoft Press Computer Dictionary, 1991).</p> <ul style="list-style-type: none"> • "[COMPUT SCI] A vertical arrangement of characters or other expressions" GGL-0008150 (McGraw-Hill Dictionary of Scientific and Technical Terms, Fourth Edition, 1989). • "[COMPUT SCI] A vertical arrangement of characters or other expressions" GGL-0008158 (McGraw-Hill Dictionary of Scientific and Technical Terms, Fifth Edition, 1994). <p>COLUMN VECTOR:</p> <ul style="list-style-type: none"> • "A matrix with only one column. That is, a matrix of

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				<p>size m-by-1." GGL-0008144 (IEEE Standard Computer Dictionary, 1990).</p> <ul style="list-style-type: none"> • "[MATH] a matrix consisting of only one column." GGL-0008150 (McGraw-Hill Dictionary of Scientific and Technical Terms, Fourth Edition, 1989). • "[MATH] a matrix consisting of only one column." GGL-0008158 (McGraw-Hill Dictionary of Scientific and Technical Terms, Fifth Edition, 1994). <p>MATRIX:</p> <ul style="list-style-type: none"> • "A two-dimensional array, conceptually arranged in rows and columns." GGL-0008145 (IEEE Standard Computer Dictionary, 1990). • "In mathematics and computing, an arrangement of rows and columns used for

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				<p>organizing related items such as numbers, dots, spreadsheet cells, or circuit elements. Matrices, or matrixes, are used in mathematics for manipulating rectangular sets of numbers. In computing and computer applications, matrixes are used for the similar purpose of arranging sets of data in table form, as in spread-sheets and lookup tables." GGL-0008167 (Microsoft Press Computer Dictionary, 1991).</p> <ul style="list-style-type: none"> • "In mathematics and computing, an arrangement of rows and columns used for organizing related items such as numbers, dots, spreadsheet cells, or circuit elements. Matrices, or matrixes, are used in mathematics for manipulating rectangular sets of numbers. In computing and computer applications, matrixes are used for the

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				<p>similar purpose of arranging sets of data in table form, as in spread-sheets and lookup tables." GGL-0008176 (Microsoft Press Computer Dictionary, Second Edition, 1994).</p> <ul style="list-style-type: none"> • "[MATH] A rectangular array of numbers or scalars from a vector space." GGL-0008152 (McGraw-Hill Dictionary of Scientific and Technical Terms, Fourth Edition, 1989). • "[MATH] A rectangular array of numbers or scalars from a vector space." GGL-0008159 (McGraw-Hill Dictionary of Scientific and Technical Terms, Fifth Edition, 1994). • "An ARRAY of ROWS AND COLUMNS" GL-0008139 (The Computer Glossary, 1983). <p>RANGE:</p>

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				<ul style="list-style-type: none"> • "In a spreadsheet, a block of cells selected for similar treatment. A range of cells can extend across a row, down a column, or over a combination of the two, but all cells in the range must be contiguous, sharing at least one common border. Ranges allow the user to affect many cells with a single command - for example, to format them similarly, enter the same data into all of them, give them a name in common and treat them as a unit or select and incorporate them into a formula. . . . In more general usage, range refers to the spread between specified low and high values. Range checking is an important method of validating data entered into an application." GGL-0008168 (Microsoft Press Computer Dictionary, 1991).

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				<ul style="list-style-type: none"> • "In a spreadsheet, a block of cells selected for similar treatment. A range of cells can extend across a row, down a column, or over a combination of the two, but all cells in the range must be contiguous, sharing at least one common border. Ranges allow the user to affect many cells with a single command - for example, to format them similarly, enter the same data into all of them, give them a name in common and treat them as a unit or select and incorporate them into a formula. . . . In more general usage, range refers to the spread between specified low and high values. Range checking is an important method of validating data entered into an application." GGL-0008177 (Microsoft Press Computer Dictionary, Second Edition, 1994).

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				<ul style="list-style-type: none"> • “[CIV ENG] Any series of contiguous townships of the U.S. Public Land Survey System.” GGL-0008153 (McGraw-Hill Dictionary of Scientific and Technical Terms, Fourth Edition, 1989). • “[CIV ENG] Any series of contiguous townships of the U.S. Public Land Survey System.” GGL-0008160 (McGraw-Hill Dictionary of Scientific and Technical Terms, Fifth Edition, 1994). <p>ROW:</p> <ul style="list-style-type: none"> • “A series of items arranged horizontally within some type of framework – for example, a continuous series of cells running from left to right in a spreadsheet; ... or a set of data (text or numeric values) aligned horizontally in a table, a mathematical array, or some other row-and-column type matrix.” GGL-0008169

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				<p>(Microsoft Press Computer Dictionary, 1991).</p> <ul style="list-style-type: none"> • “A series of items arranged horizontally within some type of framework – for example, a continuous series of cells running from left to right in a spreadsheet; ... or a set of data (text or numeric values) aligned horizontally in a table, a mathematical array, or some other row-and-column type matrix.” GGL-0008178 (Microsoft Press Computer Dictionary, Second Edition, 1994). <p>TABLE:</p> <ul style="list-style-type: none"> • “AN ORDERED COLLECTION OF DATA; A TABLE in a PROGRAM is a collection of adjacent fields containing DATA. The DATA might be stored permanently in the PROGRAM, or may be entered into the PROGRAM

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				<p>by the USER." GL-0008138 (The Computer Glossary, 1983).</p> <p>VECTOR:</p> <ul style="list-style-type: none"> • "A quantity represented by an ordered set of numbers; for example, a one-dimensional array. <i>Contrast with:</i> scalar. <i>See also:</i> column vector; row vector." GGL-0008146 (IEEE Standard Computer Dictionary, 1990). • "In computer data structures, a one-dimensional array—a set of items arranged in a single column or row. <i>See also</i> array, matrix." GGL-0008170 (Microsoft Press Computer Dictionary, 1991). • "In computer data structures, a one-dimensional array—a set of items arranged in a single column or row. <i>See also</i> array, matrix." GGL-0008179 (Microsoft Press Computer

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				<p>Dictionary, Second Edition, 1994).</p> <ul style="list-style-type: none"> • “2. A matrix consisting of a single row or a single column of entries.” GGL-0008154 (McGraw-Hill Dictionary of Scientific and Technical Terms, Fourth Edition, 1989). • “2. A matrix consisting of a single row or a single column of entries.” GGL-0008162 (McGraw-Hill Dictionary of Scientific and Technical Terms, Fifth Edition, 1994). • “ABLE OR LINE; When referring to mathematical PROCESSING, a VECTOR is a series of numbers in a TABLE.” GL-0008140 (The Computer Glossary, 1983). <p><u>Testimony</u> (Schuetze Dep. 68:19, 68:22-69:22.)</p>

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				<p>(Schuetze Dep. 79:4-6, 79:9-12.)</p> <p>(Schuetze Dep. 80:3-20.)</p> <p><u>Other Extrinsic Evidence</u></p> <p>“The problem is that the absence or presence of a given word is very little information if we treat words as unanalyzed symbols or indices in term vectors. The lexical representations used for comparing contexts have to be enriched. The approach adopted here is to represent words as term vectors that reflect their pattern of usage in a large text corpus. Figure 1 shows how this can be done. The terms <i>cash</i> and <i>sport</i> are the dimensions of the space in which similarity is to be measured. The columns of the matrix represent the words <i>bank</i>, <i>interest</i>, and <i>finals</i>. Each entry in the matrix is a cooccurrence count. For instance, $_{\text{cash}} \text{bank} = 300$ encodes the fact that the words <i>cash</i> and <i>bank</i> cooccur 300 times in the</p>

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lexical co-occurrence (claim 1)	Two or more words or terms which appear in text within some distance of each other. Two terms lexically co-occur if they appear in text within some distance of each other.	Specification: "Two terms lexically co-occur if they appear in text within some distance of each other, i.e., a window of k words." (col. 4, lines 29-31).	the appearance of two words within a specified range of each other	Specification: "Two terms lexically co-occur if they appear in text within some distance of each other, i.e., a window of k words." (col. 4, lines 29-31). "Each element c_{ij} of matrix C records the number of times that words i and j co-occur in a												
				GGL-0006177 (Dimensions of Meaning, p. 787, Figure 1).												
				(hypothetical) corpus. Cooccurrence can be defined with respect to windows of a given size or on the basis of sentence boundaries." GGL-0006177 (Dimensions of Meaning, p. 787, section 1, cols. 1-2). <table border="1" data-bbox="795 1564 901 1963"> <thead> <tr> <th></th> <th>bank</th> <th>interest</th> <th>finals</th> </tr> </thead> <tbody> <tr> <td>cash</td> <td>300</td> <td>210</td> <td>133</td> </tr> <tr> <td>sport</td> <td>75</td> <td>140</td> <td>200</td> </tr> </tbody> </table> <p>Figure 1: A collocation matrix.</p>		bank	interest	finals	cash	300	210	133	sport	75	140	200
	bank	interest	finals													
cash	300	210	133													
sport	75	140	200													

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<p>corpous of documents (claims 1, 25, 27, 28, 31)</p>	<p>A collection of documents which are available to an information retrieval system</p>	<p>File History: "Cooccurrence can be defined with respect to windows of a given size or on the basis of sentence boundaries." GGL-0006177 (Schuetze, Hinrich, "Dimensions of Meaning," Proceedings of Supercomputing '92 (Los Alamitos, CA, 1992), IEEE Computer Society Press, p. 787, section 1, col. 2, 1992).</p>	<p>a collection of documents on a particular subject matter or from a particular source</p>	<p>Specification: "This invention relates to improvements in retrieving relevant documents from a corpus of documents." (col. 1, lines 8-9). "DocumentSpace, which is the second part of TwinSpaces, contains 34,000 articles from the New York Times newswire between the months of June and November of 1990." (col. 13, lines 35-37).</p>

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range (claim 1)	The distance of text around a retrieved word.	recording the number of times a co-occurring word co-occurs in a same document within a predetermined range of the retrieved word and repeating the retrieving and recording for each word in the corpus." ('819 File History – Reasons for Allowance).	a window of contiguous words	<p>“Tipster is a corpus of documents controlled by the government (NIST-National Institute of Standards and Technology) to further information retrieval methods.” (col. 16, lines 44-46).</p> <p>Extrinsic Evidence: <u>Testimony</u> (Schuetze Dep. 49:13-17.) (Schuetze Dep. 49:23-50:4, 50:6-8, 50:10-15.) (Schuetze Dep. 54:9-55:12.) (Schuetze Dep. 55:21-56:17.) (Schuetze Dep. 72:15-24.) (Schuetze Dep. 77:24-78:1, 78:3, 78:5-11.)</p> <p>Specification: “Two terms lexically co-occur if they appear in text within some distance of each other, i.e., a window of k words.” (col. 4, lines</p>

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		<p>predetermined range of the retrieved word;" (Claim 1, col. 24, lines 45-47).</p> <p>"Two terms lexically co-occur if they appear in text within some distance of each other, i.e., a window of k words." (col. 4, lines 29-31).</p> <p>"Figure 7 shows Matrix B, which has rows corresponding to A-classes, i.e., columns to words. For example, the B-subset contains the 20,000 most frequent words, excluding stop words." (col. 15, lines 50-53).</p> <p>See also Claim 4 and claim 11.</p> <p><u>File History:</u></p> <p>"The prior art fails to teach or suggest a method for generating a thesaurus of word vectors for a corpus of documents by retrieving a word from the corpus and recording the number of times a co-occurring word co-occurs in a</p>		<p>29-31).</p> <p>"Being a neighbor is defined as occurring at a distance of less than W intervening words. A reasonable setting of W is 50 words." (col. 7, line 67 to col. 8, line 2).</p> <p>"[T]he number of times that words i and j co-occur in a window of size k. For example, the window k can be forty or fifty words." (col. 14, lines 42-44).</p> <p><u>Extrinsic Evidence:</u> <u>Dictionaries</u> RANGE:</p> <ul style="list-style-type: none"> "In a spreadsheet, a block of cells selected for similar treatment. A range of cells can extend across a row, down a column, or over a combination of the two, but all cells in the range must be contiguous, sharing at least one common border. Ranges

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		<p>same document within a predetermined range of the retrieved word and repeating the retrieving and recording for each word in the corpus." ('819 File History – Reasons for Allowance).</p>		<p>allow the user to affect many cells with a single command - for example, to format them similarly, enter the same data into all of them, give them a name in common and treat them as a unit or select and incorporate them into a formula... In more general usage, range refers to the spread between specified low and high values. Range checking is an important method of validating data entered into an application." GGL-0008168 (Microsoft Press Computer Dictionary, 1991).</p> <ul style="list-style-type: none"> • "In a spreadsheet, a block of cells selected for similar treatment. A range of cells can extend across a row, down a column, or over a combination of the two, but all cells in the range must be contiguous, sharing at least one common border. Ranges

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				<p>allow the user to affect many cells with a single command - for example, to format them similarly, enter the same data into all of them, give them a name in common and treat them as a unit or select and incorporate them into a formula. ... In more general usage, range refers to the spread between specified low and high values. Range checking is an important method of validating data entered into an application.” GGL-0008177 (Microsoft Press Computer Dictionary, Second Edition, 1994).</p> <ul style="list-style-type: none"> • “[CIV ENG] Any series of contiguous townships of the U.S. Public Land Survey System.” GGL-0008153 (McGraw-Hill Dictionary of Scientific and Technical Terms, Fourth Edition, 1989). • “[CIV ENG] Any series of

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<p>context vector (claims 1, 25, 27, 28, 31)</p>	<p>A value corresponding to a combination of the sums of thesaurus vectors of words used</p>	<p>Specification: “The context vector is a combination of the weighted sums of the thesaurus vectors of all the words contained in the document.” (col. 5, lines 5-7). “The document vectors that are computed are called ‘context vectors.’ The simplest approach is to represent each document by a vector, which is the sum of the thesaurus vectors for the words in its text.” (col. 17, lines 16-20).</p>	<p>a combination of all word vectors for each word in a document or in a query</p>	<p>contiguous townships of the U.S. Public Land Survey System.” GGL-0008160 (McGraw-Hill Dictionary of Scientific and Technical Terms, Fifth Edition, 1994). Testimony (Schuetze Dep. 91:8-94:24.) Specification: “After forming the thesaurus vectors, a context vector for each document is computed. The context vector is a combination of the weighted sums of the thesaurus vectors of all the words contained in the document.” (col. 5, lines 4-j7). “The second preferred embodiment uses the computed thesaurus vectors to perform a search for relevant documents. To use this information directly in the search, a similar representation for documents is needed. The document vectors that are</p>

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				<p>computed are called 'context vectors.' The simplest approach is to represent each document by a vector, which is the sum of the thesaurus vectors for the words in its text." (col. 17, lines 13-20).</p> <p>Figure 10 (see col. 17, lines 56-66 ("FIG. 10 shows the process of computation of context vectors. In step 200, the query or document is loaded into the processor 16 (see FIG. 1). All of the words in the query or document are extracted in step 202. In step 204, the thesaurus vector is retrieved for the first word extracted. The thesaurus vector is added to the context vector for the document in step 206. If there are more words to process from the document, then the flow returns to step 204 to retrieve the thesaurus vector for the next word. If all the words are processed in step 208, then the context vectors are normalized in</p>

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				<p>step 210."?).</p> <p>Figure 12 (<i>see</i> col. 18, lines 14-25 ("FIG. 12 shows the process of using context vectors to retrieve relevant documents for a query. In step 230, a query is entered into the processor by the user. The processor computes the context vector for the query in step 232 using the flow diagram of FIG. 10. The computed context vectors are stored by the processor in step 234. The documents are retrieved by the processor in step 240. This step can be performed before or in parallel with the query processing. The context vectors for each document are stored in RAM or a permanent storage system in step 246 to be used for additional searches."?)).</p> <p><u>Extrinsic Evidence:</u> <u>Dictionaries</u> <u>ARRAY:</u></p>

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				<ul style="list-style-type: none"> • “An n-dimensional ordered set of data items identified by a single name and one or more indices, so that each element of the set is individually addressable.” GGL-0008143 (IEEE Standard Computer Dictionary, 1990). • “In programming, a list of data values, all of the same type.” GGL-0008165 (Microsoft Press Computer Dictionary, 1991). • “In programming, a list of data values, all of the same type.”; 81 (“column A series of items arranged vertically within some type of framework – for example, a continuous series of cells running from top to bottom in a spreadsheet; ... or a set of data (text or numeric values) aligned vertically in a table, a mathematical array, or some other row-and-column type of matrix.” GGL-

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				<ul style="list-style-type: none"> 0008174 (Microsoft Press Computer Dictionary, Second Edition, 1994). “[COMPUT SCI] A collection of data items with each identified by a subscript or key and arranged in such a way that a computer can examine the collection and retrieve data from these items associated with a particular subscript or key” GGL-0008149 (McGraw-Hill Dictionary of Scientific and Technical Terms, Fourth Edition, 1989). “[COMPUT SCI] A collection of data items with each identified by a subscript or key and arranged in such a way that a computer can examine the collection and retrieve data from these items associated with a particular subscript or key” GGL-0008157 (McGraw-Hill Dictionary of Scientific and Technical

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				<p>Terms, Fifth Edition, 1994).</p> <ul style="list-style-type: none"> • "SERIES OF DATA IN ROW OR MATRIX FORM; An ARRAY refers to a TABLE of adjacent FIELDS in a PROGRAM, which may be viewed and PROCESSED as a single row of DATA ELEMENTS or as a series of rows and columns (MATRIX)." GGL-0008137 (The Computer Glossary, 1983). <p>COLUMN</p> <ul style="list-style-type: none"> • "A series of items arranged vertically within some type of framework – for example, a continuous series of cells running from top to bottom in a spreadsheet; ... or a set of data (text or numeric values) aligned vertically in a table, a mathematical array, or some other row-and-column type of matrix." GGL-0008166 (Microsoft Press Computer

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				<p>Dictionary, 1991).</p> <ul style="list-style-type: none"> • “[COMPUT SCI] A vertical arrangement of characters or other expressions” GGL-0008150 (McGraw-Hill Dictionary of Scientific and Technical Terms, Fourth Edition, 1989). • “[COMPUT SCI] A vertical arrangement of characters or other expressions” GGL-0008158 (McGraw-Hill Dictionary of Scientific and Technical Terms, Fifth Edition, 1994). <p>COLUMN VECTOR:</p> <ul style="list-style-type: none"> • “A matrix with only one column. That is, a matrix of size m-by-1.” GGL-0008144 (IEEE Standard Computer Dictionary, 1990). • “[MATH] a matrix consisting of only one column.” GGL-0008150 (McGraw-Hill

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				<p>Dictionary of Scientific and Technical Terms, Fourth Edition, 1989).</p> <ul style="list-style-type: none"> • “[MATH] a matrix consisting of only one column.” GGL-0008158 (McGraw-Hill Dictionary of Scientific and Technical Terms, Fifth Edition, 1994). <p>MATRIX:</p> <ul style="list-style-type: none"> • “A two-dimensional array, conceptually arranged in rows and columns.” GGL-0008145 (IEEE Standard Computer Dictionary, 1990). • “In mathematics and computing, an arrangement of rows and columns used for organizing related items such as numbers, dots, spreadsheet cells, or circuit elements. Matrices, or matrixes, are used in mathematics for manipulating rectangular sets of numbers. In computing and

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				<p>computer applications, matrices are used for the similar purpose of arranging sets of data in table form, as in spread-sheets and lookup tables." GGL-0008167 (Microsoft Press Computer Dictionary, 1991).</p> <ul style="list-style-type: none"> • "In mathematics and computing, an arrangement of rows and columns used for organizing related items such as numbers, dots, spreadsheet cells, or circuit elements. Matrices, or matrixes, are used in mathematics for manipulating rectangular sets of numbers. In computing and computer applications, matrices are used for the similar purpose of arranging sets of data in table form, as in spread-sheets and lookup tables." GGL-0008176 (Microsoft Press Computer Dictionary, Second Edition,

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				<p>1994).</p> <ul style="list-style-type: none"> • “[MATH] A rectangular array of numbers or scalars from a vector space.” GGL-0008152 (McGraw-Hill Dictionary of Scientific and Technical Terms, Fourth Edition, 1989). • “[MATH] A rectangular array of numbers or scalars from a vector space.” GGL-0008159 (McGraw-Hill Dictionary of Scientific and Technical Terms, Fifth Edition, 1994). • “An ARRAY of ROWS AND COLUMNS” GL-0008139 (The Computer Glossary, 1983). <p>RANGE:</p> <ul style="list-style-type: none"> • “In a spreadsheet, a block of cells selected for similar treatment. A range of cells can extend across a row, down a column, or over a combination of the two, but all

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				<p>cells in the range must be contiguous, sharing at least one common border. Ranges allow the user to affect many cells with a single command - for example, to format them similarly, enter the same data into all of them, give them a name in common and treat them as a unit or select and incorporate them into a formula. ... In more general usage, range refers to the spread between specified low and high values. Range checking is an important method of validating data entered into an application.” GGL-0008168 (Microsoft Press Computer Dictionary, 1991).</p> <ul style="list-style-type: none"> • “In a spreadsheet, a block of cells selected for similar treatment. A range of cells can extend across a row, down a column, or over a combination of the two, but all

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				<p>cells in the range must be contiguous, sharing at least one common border. Ranges allow the user to affect many cells with a single command - for example, to format them similarly, enter the same data into all of them, give them a name in common and treat them as a unit or select and incorporate them into a formula. ... In more general usage, range refers to the spread between specified low and high values. Range checking is an important method of validating data entered into an application.”</p> <p>GGL-0008177 (Microsoft Press Computer Dictionary, Second Edition, 1994).</p> <ul style="list-style-type: none"> • “[CIV ENG] Any series of contiguous townships of the U.S. Public Land Survey System.” GGL-0008153 (McGraw-Hill Dictionary of Scientific and Technical

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				<p>Terms, Fourth Edition, 1989).</p> <ul style="list-style-type: none"> • “[CIV ENG] Any series of contiguous townships of the U.S. Public Land Survey System.” GGL-0008160 (McGraw-Hill Dictionary of Scientific and Technical Terms, Fifth Edition, 1994). <p>ROW:</p> <ul style="list-style-type: none"> • “A series of items arranged horizontally within some type of framework – for example, a continuous series of cells running from left to right in a spreadsheet; ... or a set of data (text or numeric values) aligned horizontally in a table, a mathematical array, or some other row-and-column type matrix.” GGL-0008169 (Microsoft Press Computer Dictionary, 1991). • “A series of items arranged horizontally within some type of framework – for example, a

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				<p>continuous series of cells running from left to right in a spreadsheet; ... or a set of data (text or numeric values) aligned horizontally in a table, a mathematical array, or some other row-and-column type matrix." GGL-0008178 (Microsoft Press Computer Dictionary, Second Edition, 1994).</p> <p>TABLE:</p> <ul style="list-style-type: none"> • "AN ORDERED COLLECTION OF DATA; A TABLE in a PROGRAM is a collection of adjacent fields containing DATA. The DATA might be stored permanently in the PROGRAM, or may be entered into the PROGRAM by the USER." GL-0008138 (The Computer Glossary, 1983). <p>VECTOR:</p> <ul style="list-style-type: none"> • "A quantity represented by an

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				<ul style="list-style-type: none"> ordered set of numbers; for example, a one-dimensional array. <i>Contrast with:</i> scalar. <i>See also:</i> column vector; row vector." GGL-0008146 (IEEE Standard Computer Dictionary, 1990). "In computer data structures, a one-dimensional array—a set of items arranged in a single column or row. <i>See also</i> array, matrix." GGL-0008170 (Microsoft Press Computer Dictionary, 1991). "In computer data structures, a one-dimensional array—a set of items arranged in a single column or row. <i>See also</i> array, matrix." GGL-0008179 (Microsoft Press Computer Dictionary, Second Edition, 1994). "2. A matrix consisting of a single row or a single column of entries." GGL-0008154

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co-occurrence of words (claims 1, 25, 27, 28, 31)	Relationships and/or patterns of relationship between two or more	Specification: "A thesaurus of word vectors is formed for the words in the corpus	the appearance of two words within a specified range of	<p>(McGraw-Hill Dictionary of Scientific and Technical Terms, Fourth Edition, 1989).</p> <ul style="list-style-type: none"> "2. A matrix consisting of a single row or a single column of entries." GGL-0008162 (McGraw-Hill Dictionary of Scientific and Technical Terms, Fifth Edition, 1994). "ABLE OR LINE; When referring to mathematical PROCESSING, a VECTOR is a series of numbers in a TABLE." GL-0008140 (The Computer Glossary, 1983). <p><u>Testimony</u> (Schuetz Dep. 68:19, 68:22-69:22.) (Schuetz Dep. 124:17-126:10, 126:13-127:13, 127:16-128:2.)</p> <p>Specification: "Being a neighbor is defined as occurring at a distance of less than W intervening words. A</p>

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	words	<p>of documents. The word vectors represent global logical co-occurrence patterns and relationships between word neighbors.” (Abstract of ‘819 Patent).</p> <p>“More particularly, this invention determines the co-occurrence patterns of words in a document to form a thesaurus.” (col. 1, lines 9-12).</p> <p>“Each term of the documents is associated with a vector that represents the term’s pattern of local co-occurrences. This vector can then be compared with others to measure the co-occurrence similarity, and hence semantic similarity of terms.” (col. 6, lines 27-32).</p> <p><u>File History:</u></p> <p>“Cooccurrence can be defined with respect to windows of a given size or on the basis of sentence boundaries.” GGL-</p>	each other	<p>reasonable setting of W is 50 words.” (col. 7, line 67 to col. 8, line 2).</p> <p>“Each element c_{ij} of matrix C records the number of times that words i and j co-occur in a window of size k. For example, the window k can be forty or fifty words.” (col. 14, lines 42-44).</p> <p><u>Extrinsic Evidence:</u></p> <p><u>Testimony</u></p> <p>(Schuetze Dep. 77:24-78:1, 78:3, 78:5-11.)</p> <p>(Schuetze Dep. 91:8-94:24.)</p> <p><u>Other Extrinsic Evidence</u></p> <p>“Cooccurrence can be defined with respect to windows of a given size or on the basis of sentence boundaries.” GGL-0006177 (Schuetze, Hinrich, “Dimensions of Meaning,” Proceedings of Supercomputing ’92 (Los Alamitos, CA, 1992), IEEE Computer Society Press, p.</p>

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<p>correlation coefficient (claims 25, 27, 28, 31)</p>	<p>A value representing or corresponding to the degree to which two variables are similar, e.g., the degree of difference or similarity between a query context vector and a context vector for a given document</p>	<p><u>Specification:</u> "In step 250 [of Fig. 12], the correlation coefficient is computed based on the context vector of the query and the context vectors of the corpus of documents." (col. 18, lines 26-28). "In step 340, the correlation coefficients between the computed document vectors and the factor vector are computed using the following equation..." (col. 19, lines 45-49).</p>	<p>a calculated number using a cosine function comparing the context vector of the words in a query and the context vector of the words in a document in the corpus of documents</p>	<p><u>Specification:</u> "In step 250 [of Fig. 12], the correlation coefficient is computed based on the context vector of the query and the context vectors of the corpus of documents. The correlation coefficient is computed using the cosine function described earlier (see equation 3). However, the denominator is equal to one. Thus, the equation for the correlation coefficient is: $\text{corr}(d_i, d_j) = \frac{\sum_{k=1}^n w_k(d_i)w_k(d_j)}{d_i \cdot d_j}$ where d_i is the query vector and d_j is the document vector." (col. 18, lines 26-33). <u>Extrinsic Evidence:</u></p>

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				<p><u>Testimony</u> (Schuetze Dep. 74:3-21, 74:25-75:9) (Schuetze Dep. 80:3-20.)</p> <p><u>Other Extrinsic Evidence</u> "With cosine of the angle between the vectors as a measure, we get the following correlations for the three words in Figure 1: $\cos(\text{bank, interest}) = 0.94$, $\cos(\text{interest, finals}) = 0.92$, $\cos(\text{bank, finals}) = 0.74$." GGL-0006177 (Dimensions of Meaning, p. 787, section 1, col. 2).</p>