EXHIBIT A

DISPUTED TERMS FROM THE '819 PATENT

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
1. A method, using a processor and memory, for generating a **thesaurus** of word vectors based on lexical co-occurrence of words within documents of a corpus of documents, the corpus stored in the memory, the method comprising: retrieving into the processor a retrieved word from the corpus; recording a number of times a co-occuring word co-occurs in a same document within a predetermined range of the retrieved word; repeating the recording step for every co-occurring word located within the predetermined range for each occurrence of the retrieved word in the corpus;	"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.	A data structure that defines semantic relatedness between words	

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
generating a word vector for the word based on every recorded number; repeating the retrieving, recording, recording repeating and generating steps for each word in the corpus, and storing the generated word vectors in the memory as the **thesaurus**. 25. A method, using a processor and memory, for determining relevant documents in a corpus of documents, the memory including a **thesaurus** of word vectors and a context vector for each document, the word vectors based on co-occurrence of words within each of the documents of the corpus of documents and each context vector based on the word vectors from the **thesaurus** for each word located in the corresponding document, the method comprising:				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
inputting a query; generating a context vector for the query based on the word vectors from the **thesaurus** for each word in the query; determining a correlation coefficient for each document based on the context vectors for that document and the query; ranking each document based on the determined correlation coefficients; and outputting the ranking for at least one of the documents.				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
1. A method, using a processor and memory, for generating a thesaurus of **word vectors** based on lexical co-occurrence of words within documents of a corpus of documents, the corpus stored in the memory, the method comprising: retrieving into the processor a retrieved word from the corpus; recording a number of times a co-occuring word co-occurs in a same document within a predetermined range of the retrieved word; repeating the recording step for every co-occurring word located within the predetermined range for each occurrence of the retrieved word in the corpus; generating a **word vector** for the word based on every recorded	"word vector" (Claims 1, 25, 27, 28, 31)	A representation corresponding to co-occurrence patterns and relationships between words. The word vectors represent co-occurrence patterns and relationships between word neighbors.	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 '"thesaurus vector"	

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
number; repeating the retrieving, recording, recording repeating and generating steps for each word in the corpus, and storing the generated **word vectors** in the memory as the thesaurus. 25. A method, using a processor and memory, for determining relevant documents in a corpus of documents, the memory including a thesaurus of **word vectors** and a context vector for each document, the word vectors based on co-occurrence of words within each of the documents of the corpus of documents and each context vector based on the **word vectors** from the thesaurus for each word located in the corresponding document, the method comprising: inputting a query;				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
generating a context vector for the query based on the **word vectors** from the thesaurus for each word in the query; determining a correlation coefficient for each document based on the context vectors for that document and the query; ranking each document based on the determined correlation coefficients; and outputting the ranking for at least one of the documents.				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
1. A method, using a processor and memory, for generating a thesaurus of word vectors based on **lexical co-occurrence** of words within documents of a corpus of documents, the corpus stored in the memory, the method comprising: retrieving into the processor a retrieved word from the corpus; recording a number of times a co-occuring word co-occurs in a same document within a predetermined range of the retrieved word; repeating the recording step for every co-occurring word located within the predetermined range for each occurrence of the retrieved word in the corpus; generating a word vector for the word based on every recorded	"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.	The appearance of two words within a specified range of each other	

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
number; repeating the retrieving, recording, recording repeating and generating steps for each word in the corpus, and storing the generated word vectors in the memory as the thesaurus.				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
1. A method, using a processor and memory, for generating a thesaurus of word vectors based on lexical co-occurrence of words within documents of a **corpus of documents**, the corpus stored in the memory, the method comprising: retrieving into the processor a retrieved word from the corpus; recording a number of times a co-occuring word co-occurs in a same document within a predetermined range of the retrieved word; repeating the recording step for every co-occurring word located within the predetermined range for each occurrence of the retrieved word in the corpus; generating a word vector for the word based on every recorded	"corpus of documents" (Claims 1, 25, 27, 28, 31)	A collection of documents which are available to an information retrieval system.	A collection of documents on a particular subject matter or from a particular source	

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
number; repeating the retrieving, recording, recording repeating and generating steps for each word in the corpus, and storing the generated word vectors in the memory as the thesaurus. 25. A method, using a processor and memory, for determining relevant documents in a **corpus of documents**, the memory including a thesaurus of word vectors and a context vector for each document, the word vectors based on co-occurrence of words within each of the documents of the **corpus of documents** and each context vector based on the word vectors from the thesaurus for each word located in the corresponding document, the method comprising: inputting a query; generating a context vector for				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
the query based on the word vectors from the thesaurus for each word in the query; determining a correlation coefficient for each document based on the context vectors for that document and the query; ranking each document based on the determined correlation coefficients; and outputting the ranking for at least one of the documents.				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
1. A method, using a processor and memory, for generating a thesaurus of word vectors based on lexical co-occurrence of words within documents of a corpus of documents, the corpus stored in the memory, the method comprising: retrieving into the processor a retrieved word from the corpus; recording a number of times a co-occuring word co-occurs in a same document within a predetermined **range** of the retrieved word; repeating the recording step for every co-occurring word located within the predetermined **range** for each occurrence of the retrieved word in the corpus; generating a word vector for the word based on every recorded number;	"range" (Claim 1)	The distance of text around a retrieved word.	A window of contiguous words	

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
repeating the retrieving, recording, recording repeating and generating steps for each word in the corpus, and storing the generated word vectors in the memory as the thesaurus.				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
25. A method, using a processor and memory, for determining relevant documents in a corpus of documents, the memory including a thesaurus of word vectors and a **context vector** for each document, the word vectors based on co-occurrence of words within each of the documents of the corpus of documents and each **context vector** based on the word vectors from the thesaurus for each word located in the corresponding document, the method comprising: inputting a query; generating a **context vector** for the query based on the word vectors from the thesaurus for each word in the query; determining a correlation coefficient for each document based on the **context vectors** for	"context vector" (Claims 25, 27, 28, 31)	A value corresponding to a combination of the sums of thesaurus vectors of words used	A combination of all word vectors for each word in a document or in a query	

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
that document and the query; ranking each document based on the determined correlation coefficients; and outputting the ranking for at least one of the documents.				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
1. A method, using a processor and memory, for generating a thesaurus of word vectors based on lexical **co-occurrence of words** within documents of a corpus of documents, the corpus stored in the memory, the method comprising: retrieving into the processor a retrieved word from the corpus; recording a number of times a co-occuring word co-occurs in a same document within a predetermined range of the retrieved word; repeating the recording step for every co-occurring word located within the predetermined range for each occurrence of the retrieved word in the corpus; generating a word vector for the	"co-occurrence of words" (Claims 1, 25, 27, 28, 31)	Two or more words or terms which appear in text within some distance of each other. Two terms co-occur if they appear in text within some distance of each other.	The appearance of two words within a specified range of each other	

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
word based on every recorded number; repeating the retrieving, recording, recording repeating and generating steps for each word in the corpus, and storing the generated word vectors in the memory as the thesaurus. 25. A method, using a processor and memory, for determining relevant documents in a corpus of documents, the memory including a thesaurus of word vectors and a context vector for each document, the word vectors based on **co-occurrence of words** within each of the documents of the corpus of documents and each context vector based on the word vectors from the thesaurus for each word located in the corresponding document, the method comprising:				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
inputting a query; generating a context vector for the query based on the word vectors from the thesaurus for each word in the query; determining a correlation coefficient for each document based on the context vectors for that document and the query; ranking each document based on the determined correlation coefficients; and outputting the ranking for at least one of the documents.				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
25. A method, using a processor and memory, for determining relevant documents in a corpus of documents, the memory including a thesaurus of word vectors and a context vector for each document, the word vectors based on co-occurrence of words within each of the documents of the corpus of documents and each context vector based on the word vectors from the thesaurus for each word located in the corresponding document, the method comprising: inputting a query; generating a context vector for the query based on the word vectors from the thesaurus for each word in the query; determining a **correlation coefficient** for each document based on the context vectors for	"correlation coefficient" (Claims 25, 27, 28, 31)	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	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	

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
that document and the query; ranking each document based on the determined **correlation coefficients**; and outputting the ranking for at least one of the documents.				

DISPUTED TERMS FROM THE '785 PATENT

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
52. A method of operating a system that includes a display, user input means for providing signals, and a processor connected for receiving signals from the user input means and for presenting images on the display; the user input means providing motion requesting signals; the motion requesting signals requesting viewpoint motion and **point of interest** motion; the user input means being structured so that the user can request viewpoint motion and **point of interest** motion independently; the method	"point of interest" (Claims 52, 55)	Agreed: a point indicated by the user and relative to which the viewpoint can move	Agreed: a point indicated by the user and relative to which the viewpoint can move.	Agreed: a point indicated by the user and relative to which the viewpoint can move.

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
comprising steps of: presenting a first image on the display; the first image including a first surface that is perceptible as viewed from a first viewpoint within a three-dimensional workspace; the first image including a first **point of interest** on the first surface; the step of presenting the first image comprising a substep of storing viewpoint coordinate data indicating a position of the first viewpoint in the three-dimensional workspace; receiving a first motion requesting signal set from the user input means, the first motion requesting signal set requesting a first viewpoint motion and a first **point of interest** motion; and in response to the first motion requesting signal, presenting a second image on the display; the				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
second image including a second surface that is perceptible as a continuation of the first surface viewed from a second viewpoint within the three-dimensional workspace, the second viewpoint being displaced from the position indicated by the stored viewpoint coordinate data in accordance with the first viewpoint motion; the second image including a second **point of interest** on the second surface, the second **point of interest** being displaced in accordance with the first point of interest motion.				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
1. A method of operating a system that includes a display, a user input device, and a processor connected for receiving signals from the user input device and for presenting images on the display; the user input device providing region indicating signals indicating regions within images presented and motion requesting signals requesting viewpoint motion; the method comprising steps of: presenting a first image on the display; the first image including a first surface that is perceptible as viewed from a first viewpoint within a three-dimensional workspace; the step of presenting the first image comprising a substep of storing **viewpoint coordinate data** indicating a position of the first viewpoint in the	"viewpoint coordinate data" (Claims 1 and 52)	Information representing the position of the viewpoint in a three dimensional workspace	The position on the x-axis, the y-axis, and the z-axis in a three-dimensional workspace from which the workspace is viewed	

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
three-dimensional workspace; receiving a first region indicating signal and a first motion requesting signal from the user input device; the first region indicating signal indicating a first region on the first surface; the first motion requesting signal requesting viewpoint motion relative to the first region; and presenting a second image on the display; the second image including a second surface that is perceptible as a continuation of the first surface viewed from a second viewpoint within the three-dimensional workspace, the second viewpoint being displaced from the position indicated by the stored **viewpoint coordinate data** relative to the first region on the first surface in accordance with the first motion requesting signal.				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
52. A method of operating a system that includes a display, user input means for providing signals, and a processor connected for receiving signals from the user input means and for presenting images on the display; the user input means providing motion requesting signals; the motion requesting signals requesting viewpoint motion and point of interest motion; the user input means being structured so that the user can request viewpoint motion and point of interest motion independently; the method comprising steps of: presenting a first image on the display; the first image including a first surface that is perceptible as viewed from a first viewpoint within a three-dimensional workspace; the first image including a first point of interest on the first surface; the step of presenting the first image				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
comprising a substep of storing **viewpoint coordinate data** indicating a position of the first viewpoint in the three-dimensional workspace; receiving a first motion requesting signal set from the user input means, the first motion requesting signal set requesting a first viewpoint motion and a first point of interest motion; and in response to the first motion requesting signal, presenting a second image on the display; the second image including a second surface that is perceptible as a continuation of the first surface viewed from a second viewpoint within the three-dimensional workspace, the second viewpoint being displaced from the position indicated by the stored **viewpoint coordinate data** in accordance with the first viewpoint motion; the second image including a second point				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
of interest on the second surface, the second point of interest being displaced in accordance with the first point of interest motion.				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
52. A method of operating a system that includes a display, **user input means for providing signals**, and a processor connected for receiving signals from the user input means and for presenting images on the display; the user input means providing motion requesting signals; the motion requesting signals requesting viewpoint motion and point of interest motion; the user input means being structured so that the user can request viewpoint motion and point of interest	"user input means for providing signals" (Claim 52)	Corresponding structure: one or more user input devices that provide signals based on actions of a user, such as a keyboard, a mouse, a multidimensional input device such as a VPL glove or other input device and each of their equivalents. Function: providing signals based on actions of a user	Structure: one or more user input devices that provide separate signals based on actions of a user, such as a keyboard, a mouse, a multidimensional input device such as a VPL glove or other input device and each of their equivalents. Function: providing signals requesting viewpoint motion and point of interest motion	

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
motion independently; the method comprising steps of: presenting a first image on the display; the first image including a first surface that is perceptible as viewed from a first viewpoint within a three-dimensional workspace; the first image including a first point of interest on the first surface; the step of presenting the first image comprising a substep of storing viewpoint coordinate data indicating a position of the first viewpoint in the three-dimensional workspace; receiving a first motion requesting signal set from the user input means, the first motion requesting signal set requesting a first viewpoint motion and a first point of interest motion; and in response to the first motion requesting signal, presenting a second image on the display; the				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
second image including a second surface that is perceptible as a continuation of the first surface viewed from a second viewpoint within the three-dimensional workspace, the second viewpoint being displaced from the position indicated by the stored viewpoint coordinate data in accordance with the first view point motion; the second image including a second point of interest on the second surface, the second point of interest being displaced in accordance with the first point of interest motion.				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
52. A method of operating a system that includes a display, user input means for providing signals, and a processor connected for receiving signals from the user input means and for presenting images on the display; the user input means providing motion requesting signals; the motion requesting signals requesting viewpoint motion and point of interest motion; the user input means being structured so that **the user can request viewpoint motion and point of interest motion independently**; the method comprising steps of: presenting a first image on the display; the first image including a first surface that is perceptible as viewed from a first viewpoint within a three-dimensional workspace; the first image including a first point of interest	"the user can request viewpoint motion and point of interest motion independently" (Claim 52)	The user can request viewpoint motion and/or point of interest motion separately or simultaneously	The user can request viewpoint motion and point of interest motion separately and simultaneously	

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
on the first surface; the step of presenting the first image comprising a substep of storing viewpoint coordinate data indicating a position of the first viewpoint in the three-dimensional workspace; receiving a first motion requesting signal set from the user input means, the first motion requesting signal set requesting a first viewpoint motion and a first point of interest motion; and in response to the first motion requesting signal, presenting a second image on the display; the second image including a second surface that is perceptible as a continuation of the first surface viewed from a second viewpoint within the three-dimensional workspace, the second viewpoint being displaced from the position indicated by the stored viewpoint coordinate data in accordance with the first view				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
point motion; the second image including a second point of interest on the second surface, the second point of interest being displaced in accordance with the first point of interest motion.				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
52. A method of operating a system that includes a display, user input means for providing signals, and a processor connected for receiving signals from the user input means and for presenting images on the display; the user input means providing motion requesting signals; the motion requesting signals requesting viewpoint motion and point of interest motion; the user input means being structured so that the user can request viewpoint motion and point of interest motion independently; the method comprising steps of: presenting a first image on the display; the first image including a first surface that is perceptible as viewed from a first viewpoint within a three-dimensional workspace; the first image including a first point of interest on the first surface; the step of	"motion requesting signal set" (Claim 52)	Signals representative of data for viewpoint motion and/or point of interest motion in a three-dimensional workspace	A group of commands indicating a point of interest motion and a viewpoint motion relative to the point of interest	

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
presenting the first image comprising a substep of storing viewpoint coordinate data indicating a position of the first viewpoint in the three-dimensional workspace; receiving a first **motion requesting signal set** from the user input means, the first **motion requesting signal set** requesting a first viewpoint motion and a first point of interest motion; and in response to the first motion requesting signal, presenting a second image on the display; the second image including a second surface that is perceptible as a continuation of the first surface viewed from a second viewpoint within the three-dimensional workspace, the second viewpoint being displaced from the position indicated by the stored viewpoint coordinate data in accordance with the first view point motion; the second image				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
including a second point of interest on the second surface, the second point of interest being displaced in accordance with the first point of interest motion.				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
1. A method of operating a system that includes a display, a user input device, and a processor connected for receiving signals from the user input device and for presenting images on the display; the user input device providing region indicating signals indicating regions within images presented and motion requesting signals requesting **viewpoint motion**; the method comprising steps of: presenting a first image on the display; the first image including a first surface that is perceptible as viewed from a first viewpoint within a three-dimensional workspace; the step of presenting the first image comprising a substep of storing viewpoint coordinate data indicating a position of the first viewpoint in the	"viewpoint motion" (Claims 1, 28, 42, and 52)	A sequence of images that are perceptible as views of a three-dimensional workspace from a moving or displaced viewpoint	A sequence of images that causes the viewpoint to appear to move from an initial position to other positions	

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
three-dimensional workspace; receiving a first region indicating signal and a first motion requesting signal from the user input device; the first region indicating signal indicating a first region on the first surface; the first motion requesting signal requesting **viewpoint motion** relative to the first region; and presenting a second image on the display; the second image including a second surface that is perceptible as a continuation of the first surface viewed from a second viewpoint within the three-dimensional workspace, the second viewpoint being displaced from the position indicated by the stored viewpoint coordinate data relative to the first region on the first surface in accordance with the first motion requesting signal.				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
28. A method of operating a system that includes a display, a user input device, and a processor connected for receiving signals from the user input device and for presenting images on the display; the user input device providing motion requesting signals requesting **viewpoint motion**; the method comprising steps of: presenting a first image on the display; the first image including a first surface that is perceptible as being viewed from a first viewpoint within a three-dimensional workspace; the first surface including a first region; the first viewpoint being positioned at a first distance from the first region; receiving a first motion requesting signal requesting **viewpoint motion** from the user input device; and				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
presenting a second image on the display; the second image including a second surface that is perceptible as a continuation of the first surface viewed from a second viewpoint within the three-dimensional workspace; the second viewpoint being displaced by a First displacement from the first viewpoint in accordance with the first motion requesting signal; the first displacement being a function of the first distance.				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
52. A method of operating a system that includes a display, user input means for providing signals, and a processor connected for receiving signals from the user input means and for presenting images on the display; the user input means providing motion requesting signals; the motion requesting signals requesting viewpoint motion and **point of interest motion**; the user input means being structured so that the user can request viewpoint motion and **point of interest motion** independently; the method comprising steps of: presenting a first image on the display; the first image including a first surface that is perceptible as viewed from a first viewpoint within a three-dimensional workspace; the first image including a first point of interest on the first surface; the step of	"point of interest motion" (Claim 52)	A sequence of images that are perceptible as views of a three-dimensional workspace including a moving or displaced point of interest	A change in location of the point of interest as indicated by a user	

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
presenting the first image comprising a substep of storing viewpoint coordinate data indicating a position of the first viewpoint in the three-dimensional workspace; receiving a first motion requesting signal set from the user input means, the first motion requesting signal set requesting a first viewpoint motion and a first **point of interest motion**; and in response to the first motion requesting signal, presenting a second image on the display; the second image including a second surface that is perceptible as a continuation of the first surface viewed from a second viewpoint within the three-dimensional workspace, the second viewpoint being displaced from the position indicated by the stored viewpoint coordinate data in accordance with the first viewpoint motion; the second				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
image including a second point of interest on the second surface, the second point of interest being displaced in accordance with the first **point of interest motion**.				

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
55. The method of claim 52 in which the first view-point motion includes **radial motion**, the second viewpoint being displaced radially along a ray extending from the second point of interest through the first viewpoint.	"radial motion" (Claim 55)	Motion or displacement along one or more rays	Perceived movement along a ray	

Claim Language	Claim Element	Plaintiffs' Construction	Google's Construction	Court's Construction
55. The method of claim 52 in which the first view-point motion includes radial motion, the second viewpoint being displaced radially along a **ray** extending from the second point of interest through the first viewpoint.	"ray" (Claim 55)	Extending from a radial source	A straight line extending from a radial source or point in a three-dimensional space	