Exhibit B-12

ACC - 12

Invalidity Chart
Braden in view of Kurtzman, II and Additional Prior Art References

Invalidity Chart
Braden in view of Kurtzman, II and Additional Prior Art References

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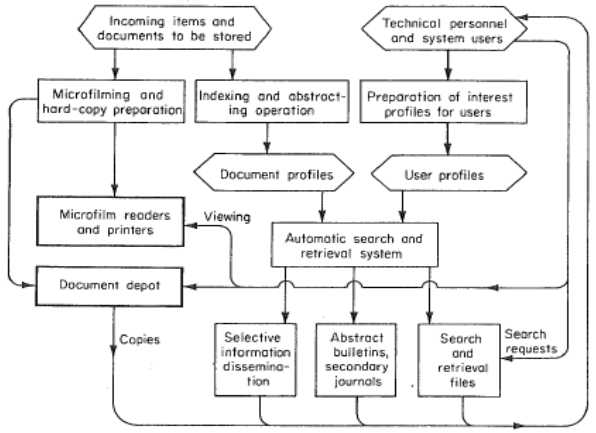
45. A data processing method for generating a user data profile representative of a user's social, cultural, educational, economic background and of the user's psychological profile, the method being implemented in a computer system having a storage system, comprising the steps of:		Kurtzman, II 1:54-56 "[A]n object of the invention is to provide a more sophisticated profiling technique for generating a more useful user profile." Kurtzman, II 3:21-23 "User profiling uses content stream analysis, as well as demographic, geographic, psychographic, digital identification, and HTTP information."	Salton 1968, p. 414  Fig. 10-4 Typical technical information center. Salton 1968, p. 93 "There are many ways in which higher level terms, corresponding in the natural language to phrases or to word combinations, might be assigned to documents as content identifiers. These include, for example, statistical procedures measuring the strength of association between text words, and syntactic analysis methods that detect syntactic relationships between words. A third possibility, called the statistical phrase process, incorporated into the Smart system is based on a pre constructed phrase dictionary, and phrases are detected by a look up procedure similar to that previously described for the regular word stem thesaurus." Chislenko 4:15-18 "For example, the system may assume that Web sites for which the user has created "bookmarks" are liked by that user

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			and may use those sites as initial entries in the user's profile." Belkin p. 399 "In the general information seeking interaction, the IR system needs to have (see Table 1 for a brief listing of the ten functions and their acronyms): a model of the user himself, including goals, intentions and experience (UM)." Belkin p. 402 "I^3R (Intelligent Interface for Information Retrieval) is a system designed to help overcome the difficulties of using text retrieval systems. As an interface system, it is responsive to a wide variety of users, who have varying levels of ability in computer use and varying levels of knowledge about the topic being investigated." Herz 27:62-66 "In a variation, each user's user profile is subdivided into a set of long-term attributes, such as demographic characteristics, and a set of shortterm attributes that help to identify the user's temporary desires and emotional state." Herz 20:35-37; 11:31-38 "User profiles may make use of any attributes that are useful in characterizing humans. . . . written response[s] to Rorschach inkblot test . . . multiple-choice responses by [the person] to self-image questions . . . their literary tastes and psychological peculiarities." Herz *See also* Abstract; 1:18-43; 4:49–8:8; 28:41–55:42; 55:44–56:14; 56:15-30; 58:57–60:9; Figures 1-16.

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(a) retrieving, by the computer system, user linguistic data previously provided by the user, said user linguistic data comprising at least one text item, each said at least one text item comprising at least one sentence;		Kurtzman, II 3:45-49 "The user instructs the website server to access the website corpus and retrieve and transmit specific website files. These specific files selected and viewed by the user are recorded by the affinity server."	See Salton 1968, p. 414 (Fig. 10-4) Salton 1968, p. 95 "If it is also desired to use the syntactic option, those sentences containing statistical phrases are separated from the remainder of the text in order to be used later as input for the syntactic analysis programs. These programs, to be described in Chap. 5, are designed to eliminate statistical phrases that do not pass the syntactic screens; they need not be applied to sentences in which no statistical phrases were ever detected." Salton 1968, p. 96, Fig. 3-19.

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			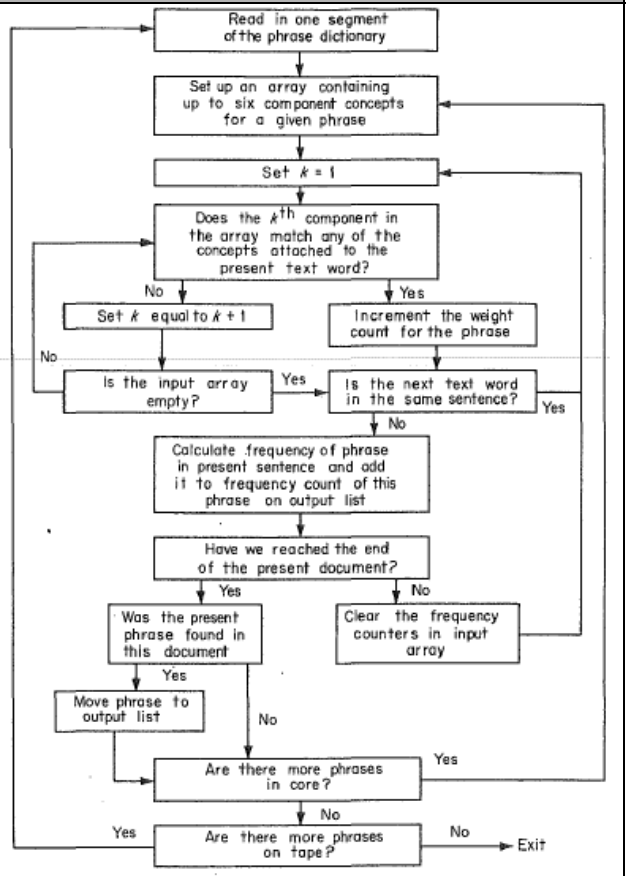 **Fig. 3-19** Statistical phrase detection. Chislenko 4:15-18 "For example, the system may assume that Web sites for which the user has created "bookmarks" are liked by that user and may use those sites as initial entries in the user's profile." Chislenko 4:40-50 "Ratings can be inferred by the system from the user's usage pattern. For example, the system may monitor how long the user views a particular Web page and store in that user's profile an indication that the user

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			likes the page, assuming that the longer the user views the page, the more the user likes the page. Alternatively, a system may monitor the user's actions to determine a rating of a particular item for the user. For example, the system may infer that a user likes an item which the user mails to many people and enter in the user's profile and indication that the user likes that item." Dedrick *See, e.g.*, 3:37–4:9, 5:34–6:3, 6:53–8:19, 14:65–15:10, Abstract, Figures 1–8. Belkin p. 402 "The overall structure of the system is based on blackboard architecture, a collection of independent cooperating experts which communicate indirectly using a shared global data structure. The I^3R system can be compared to the Hearsay-II system. Hearsay-II is a speech understanding system that synthesizes the partial interpretations of several diverse knowledge sources into a coherent understanding of a spoken sentence. [21] Knowledge sources communicate by reading and writing on a blackboard. The blackboard has several distinct levels which hold different representations of the problem space." [Similar to the speech understanding system, I^3R takes data provided by the user, which can include sentences, and later uses the information.] Belkin p. 403 "For I^3R to be adaptable, it must be able to assess the user's abilities so it can adjust the interface to match them.[22]." Salton 1989, p. 405-6 "To help furnish

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			semantic interpretations outside specialized or restricted environments, the existence of a *knowledge base* is often postulated. Such a knowledge base classifies the principal entities or concepts of interest and specifies certain relationships between the entities. [43-45]. . . . The literature includes a wide variety of different knowledge representations … [one of the] best-known knowledge-representation techniques [is] the *semantic-net*. . . . In generating a semantic network, it is necessary to decide on a method of representation for each entity, and to relate or characterize the entities. The following types of knowledge representations are recognized: [46-48]. . . . A linguistic level in which the elements are language specific and the links represent arbitrary relationships between concepts that exist in the area under consideration." Herz 27:62-67 "In a variation, each user's user profile is subdivided into a set of long-term attributes, such as demographic characteristics, and a set of short-term attributes . . . such as the user's textual and multiple-choice answers to questions." Herz 56:20-28 "As in any application involving search profiles, they can be initially determined for a new user (or explicitly altered by an existing user) by any of a number of procedures, including the following preferred methods: . . . (2) using copies of the profiles of target objects or target clusters that the user indicates are representative of his or her interest."

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			Herz *See also* Abstract; 1:18-43; 4:49–8:8; 28:41–55:42; 55:44–56:14; 56:15-30; 58:57–60:9; Figures 1-16. Culliss 3:46-48 "Inferring Personal Data. Users can explicitly specify their own personal data, or it can be inferred from a history of their search requests or article viewing habits. In this respect, certain key words or terms, such as those relating to sports (i.e. "football" and "soccer"), can be detected within search requests and used to classify the user as someone interested in sports."
(b) generating, by the computer system, an empty user data profile;		Kurtzman, II Abstract "Content stream analysis is a user profiling technique that generates a user profile based on the content files selected and viewed by a user. This user profile can then used to help select an advertisement or other media presentation to be shown to the user." Kurtzman, II *See, e.g.*, 3:45-50.	See Salton 1968 p. 414 (Fig. 10-4). Chislenko 3:38-39 "Each user profile associates items with the ratings given to those items by the user. Each user profile may also store information in addition to the user's ratings." Chislenko 4:15-18 "For example, the system may assume that Web sites for which the user has created "bookmarks" are liked by that user and may use those sites as initial entries in the user's profile." Chislenko 4:40-50 "Ratings can be inferred by the system from the user's usage pattern. For example, the system may monitor how long the user views a particular Web page and store in that user's profile an indication that the user likes the page, assuming that the longer the user views the page, the more the user likes the page. Alternatively, a system may monitor the

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			user's actions to determine a rating of a particular item for the user. For example, the system may infer that a user likes an item which the user mails to many people and enter in the user's profile and indication that the user likes that item." Dedrick *See, e.g.*, 3:37–4:9, 5:34–6:3, 6:53–8:19, 14:65–15:10, Abstract, Figures 1–8. Belkin p. 403 "For I^3R to be adaptable. it must be able to assess the user's abilities so it can adjust the interface to match them.[22] This requires a user model builder. As each user may have his own view of the subject area being searched, it would be valuable to capture this information and remember it from session to session in a domain knowledge expert." Herz 56:20-31 teaches that user profiles should be created for "new users," 27:49-51, and specifies how user search profiles can be "initially determined." Herz *See also* Abstract; 1:18-43; 27:47-49; 27:62-67; 4:49–8:8; 28:41–55:42; 55:44–56:14; 56:15-30; 58:57–60:9; Figures 1-16. Culliss 3:46-48 "Inferring Personal Data. Users can explicitly specify their own personal data, or it can be inferred from a history of their search requests or article viewing habits. In this respect, certain key words or terms, such as those relating to sports (i.e. "football" and "soccer"), can be detected within search requests and used to classify the user as someone interested in sports."

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(c) retrieving, by the computer system, a text item from said user linguistic data;	Braden 7:47-49 "each of the documents in the set is subjected to natural language processing, specifically morphological, syntactic and logical form, to produce logical forms for each sentence in that document." Braden Abstract "Apparatus and accompanying methods for an information retrieval system that utilizes natural language processing to process results retrieved by, for example, an information retrieval engine such as a conventional statistical-based search engine, in order to improve overall precision. Specifically, such a search ultimately yields a set of retrieved documents. Each such document is then subjected to natural language processing to produce a set of logical forms." Braden *See, e.g.*, 11:62-14:61.	Kurtzman, II 3:49-50 "The content stream to be analyzed includes the specific files selected and viewed by the user." Kurtzman, II, Figs. 6, 7, and 9.	Salton teaches retrieving locating multiple text items. See Salton 1968, p. 96 (Fig. 3-19) ("Are there more phrases on [magnetic storage] tape"), above. Chislenko 4:15-18 "For example, the system may assume that Web sites for which the user has created "bookmarks" are liked by that user and may use those sites as initial entries in the user's profile." Chislenko 4:40-50 "Ratings can be inferred by the system from the user's usage pattern. For example, the system may monitor how long the user views a particular Web page and store in that user's profile an indication that the user likes the page, assuming that the longer the user views the page, the more the user likes the page. Alternatively, a system may monitor the user's actions to determine a rating of a particular item for the user. For example, the system may infer that a user likes an item which the user mails to many people and enter in the user's profile and indication that the user likes that item." Dedrick *See, e.g.*, 3:37–4:9, 5:34–6:3, 6:53–8:19, 14:65–15:10, Abstract, Figures 1–8. Belkin p. 402 "I^3R (Intelligent Interface for Information Retrieval) is a system designed to help overcome the difficulties of using text retrieval systems. As an interface system, it is responsive to a wide variety of users, who have varying levels of ability in computer use and varying levels of knowledge about the topic being investigated. The I^3R system can be

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			compared to the Hearsay-II system. Hearsay-II is a speech understanding system that synthesizes the partial interpretations of several diverse knowledge sources into a coherent understanding of a spoken sentence.” Salton 1989, p. 290 “[S]tored records are identified by sets of single terms that are used collectively to represent the information content of each record. . . . Among the methods suggested to generate complex identifiers are linguistic-analysis procedures capable of recognizing linguistically related units in document texts.” Salton 1989, p. 294-6 (see also fn. 28-30)(*Linguistic methodologies including s*yntactic class indicators (adjective, noun, adverb, etc.) are assigned to the terms). Herz 13:24-27 teaches that, for the purposes of creating a profile, “one could . . . break the text into overlapping word bigrams (sequences of 2 adjacent words), or more generally, word n-grams.” Herz *See also* Abstract; 1:18-43; 27:47-49; 27:62-67; 4:49–8:8; 28:41–55:42; 55:44–56:14; 56:15-30; 58:57–60:9; Figures 1-16. Culliss 3:46-48 “Inferring Personal Data Users can explicitly specify their own personal data, or it can be inferred from a history of their search requests or article viewing habits. In this respect, certain key words or terms, such as those relating to sports (i.e. “football” and “soccer”), can be detected within search

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			requests and used to classify the user as someone interested in sports."
(d) separating, by the computer system, said text item into at least one sentence;	Braden 7:47-49 "each of the documents in the set is subjected to natural language processing, specifically morphological, syntactic and logical form, to produce logical forms for each sentence in that document." Braden Abstract "Each such document is then subjected to natural language processing to produce a set of logical forms. Each such logical form encodes, in a word-relation-word manner, semantic relationships, particularly argument and adjunct structure, between words in a phrase." Braden *See, e.g.*, 11:62-14:61.	Kurtzman, II 4:38-39 "Next, the individual words are passed through a stemming procedure to obtain words and word-stems (block 708)." Kurtzman, II, Figs. 6, 7, and 9. Kurtzman, II *See, e.g.*, 5:31-41.	See Salton 1968, p. 96 (Fig. 3-19), above. Salton 1968, p. 95 "The phrase finding process is completely straightforward and consists of matching the first component of a given phrase with each component of each word of a given sentence; the second phrase component is then matched, and so on." Dedrick *See, e.g.*, 3:37–4:9, 5:34–6:3, 6:53–8:19, 14:65–15:10, Abstract, Figures 1–8. Kupiec 4:27-29 "Continuing with Example 1, suppose that the retrieved documents contain the following additional noun phrases in proximity to the noun phrase "New York City."" Kupiec 11:19-24 "In step 300 the input string is analyzed to determine what part of speech each word of the string is. Each word of the string is tagged to indicate whether it is a noun, verb, adjective, etc. Tagging can be accomplished, for example, by a tagger that uses a hidden Markov model. The result produced by step 300 is a tagged input string." Kupiec 11:28-30 "In step 310, which comprises component steps 311 and 312, the tagged input string is analyzed to detect noun phrases. In step 315 the tagged input string is further analyzed to detect main verbs."

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			Kupiec 13:15-21 “The match sentences are analyzed in substantially the same manner as the input string is analyzed in step 220 above. The detected phrases typically comprise noun phrases and can further comprise title phrases or other kinds of phrases. The phrases detected in the match sentences are called preliminary hypotheses.” Kupiec 14:45-54 “Hypotheses are verified in step 260 through lexico-syntactic analysis. Lexico-syntactic analysis comprises analysis of linguistic relations implied by lexico-syntactic patterns in the input string, constructing or generating match templates based on these relations, instantiating the templates using particular hypotheses, and then attempting to match the instantiated templates, that is, to find primary or secondary documents that contain text in which a hypothesis occurs in the context of a template.” Herz 13:24-27 teaches that, for the purposes of creating a profile, “one could . . . break the text into overlapping word bigrams (sequences of 2 adjacent words), or more generally, word n-grams.” Herz *See also* Abstract; 1:18-43; 27:47-49; 27:62-67; 4:49–8:8; 28:41–55:42; 55:44–56:14; 56:15-30; 58:57–60:9; Figures 1-16.

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(e) extracting, from each of said at least one sentence, by the computer system, at least one segment representative of a linguistic pattern of each sentence of said at least one sentence;	Braden 7:47-49 "each of the documents in the set is subjected to natural language processing, specifically morphological, syntactic and logical form, to produce logical forms for each sentence in that document." Braden Abstract "Each such document is then subjected to natural language processing to produce a set of logical forms. Each such logical form encodes, in a word-relation-word manner, semantic relationships, particularly argument and adjunct structure, between words in a phrase." Braden *See, e.g.*, 11:62-14:61.	Kurtzman, II 4:38-39 "Next, the individual words are passed through a stemming procedure to obtain words and word-stems (block 708)." Kurtzman, II 5:31-41 "Each content file in the content stream is converted into individual words. Insignificant words such as HTML formatting tags and stop words are discarded. The individual words are then passed through a stemming procedure to obtain words and word-stems. The word and word-stems are counted to determine their frequencies. These frequencies are paired with the words and word-stems to create a multidimensional vector for each content file in the content stream." Kurtzman, II, Figs. 6, 7, and 9.	See Salton 1968 p. 96 (Fig. 3-19), above. Salton 1968, p. 95 "The phrase finding process is completely straightforward and consists of matching the first component of a given phrase with each component of each word of a given sentence; the second phrase component is then matched, and so on." Salton 1968, p. 95 "If a particular phrase is found in a sentence, an appropriate entry is made in a chained list of concept numbers, similar in format to the list of concepts derived by the thesaurus look-up. This concept list is kept sorted by concept number, and each concept is stored together with its weight and with coded information identifying the given concept number as a phrase concept. A typical entry in the chained list is shown in Fig. 3-18." Salton 1968, p. 95 "If it is also desired to use the syntactic option, those sentences containing statistical phrases are separated from the remainder of the text in order to be used later as input for the syntactic analysis programs." Salton 1968, p. 158 "Automatic phrase structure recognition. A number of operating automatic recognition procedures are based on context-free phase structure grammars [8]. This is the case notably of all so-called "syntax-directed" compiling systems used in the computer field for the recognition and translation of computer programming languages. One of the best known systems for automatic analysis of the context-free languages is the predictive analyzer [9, 10].

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			This system produces for a given sentence all possible syntactic interpretation compatible with the context-free grammar being used. . . For example, the word *base* will have a homograph assignment corresponding to *noun, singular*, one corresponding to *transitive verb*, and one corresponding to *adjective*." Salton 1968, p. 166 "It appears possible, therefore, as a first step toward a more complete linguistic analysis to attempt to combine a variety of grammatically related phrase components into larger entities, termed criterion phrases or criterion trees and to assign these phrases as document identifiers in the same way other concepts extracted from the thesaurus or from the statistical phrase dictionary [20]." Dedrick *See, e.g.*, 3:37–4:9, 5:34–6:3, 6:53–8:19, 14:65–15:10, Abstract, Figures 1–8. Kupiec 4:27-29 "Continuing with Example 1, suppose that the retrieved documents contain the following additional noun phrases in proximity to the noun phrase "New York City."" Kupiec 11:19-24 "In step 300 the input string is analyzed to determine what part of speech each word of the string is. Each word of the string is tagged to indicate whether it is a noun, verb, adjective, etc. Tagging can be accomplished, for example, by a tagger that uses a hidden Markov model. The result produced by step 300 is a tagged input string."

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			Kupiec 11:28-30 "In step 310, which comprises component steps 311 and 312, the tagged input string is analyzed to detect noun phrases. In step 315 the tagged input string is further analyzed to detect main verbs." Kupiec 13:15-21 "The match sentences are analyzed in substantially the same manner as the input string is analyzed in step 220 above. The detected phrases typically comprise noun phrases and can further comprise title phrases or other kinds of phrases. The phrases detected in the match sentences are called preliminary hypotheses." Kupiec 14:45-54 "Hypotheses are verified in step 260 through lexico-syntactic analysis. Lexico-syntactic analysis comprises analysis of linguistic relations implied by lexico-syntactic patterns in the input string, constructing or generating match templates based on these relations, instantiating the templates using particular hypotheses, and then attempting to match the instantiated templates, that is, to find primary or secondary documents that contain text in which a hypothesis occurs in the context of a template." Belkin p. 402 "Knowledge sources communicate by reading and writing on a blackboard. The blackboard has several distinct levels which hold different representations of the problem space. Typical blackboard levels for speech understanding are sound segments, syllables, words, and phrases. The knowledge sources are pattern-action productions: if the information on the blackboard matches the

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			pattern of a knowledge source then its action can be executed. At any time, many knowledge sources are likely to have patterns that match the contents of the blackboard." Herz 13:24-27 teaches that, for the purposes of creating a profile, "one could . . . break the text into overlapping word bigrams (sequences of 2 adjacent words), or more generally, word n-grams." Herz *See also* Abstract; 1:18-43; 27:47-49; 27:62-67; 4:49–8:8; 28:41–55:42; 55:44–56:14; 56:15-30; 58:57–60:9; Figures 1-16.
(f) adding, by the computer system, at least one segment extracted at said step (e) to said user data profile;	Braden *See, e.g.*, 11:62-14:61.	Kurtzman, II 6:31-33 "[C]reating a content data structure which indicates features of the content having particular characteristics . . . converting the content data into individual words."	See Salton 1968, p. 96 (Fig. 3-19), above. Salton 1968, p. 95 "If a particular phrase is found in a sentence, an appropriate entry is made in a chained list of concept numbers, similar in format to the list of concepts derived by the thesaurus look-up. This concept list is kept sorted by concept number, and each concept is stored together with its weight and with coded information identifying the given concept number as a phrase concept. A typical entry in the chained list is shown in Fig. 3-18." Dedrick *See, e.g.*, 3:37–4:9, 5:34–6:3, 6:53–8:19, 14:65–15:10, Abstract, Figures 1–8. Belkin p. 403 "For I^3R to be adaptable, it must be able to assess the user's abilities so it can adjust the interface to match them.[22] This requires a user model builder. As each user may have his own view of the subject area

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			being searched, it would be valuable to capture this information and remember it from session to session in a domain knowledge expert." Herz 13:24-27 teaches that, for the purposes of creating a profile, "one could . . . break the text into overlapping word bigrams (sequences of 2 adjacent words), or more generally, word n-grams." Herz *See also* Abstract; 1:18-43; 27:47-49; 27:62-67; 4:49–8:8; 28:41–55:42; 55:44–56:14; 56:15-30; 58:57–60:9; Figures 1-16. Culliss 3:46-48 "Inferring Personal Data. Users can explicitly specify their own personal data, or it can be inferred from a history of their search requests or article viewing habits. In this respect, certain key words or terms, such as those relating to sports (i.e. "football" and "soccer"), can be detected within search requests and used to classify the user as someone interested in sports."
(g) repeating, by the computer system, said steps (c) to (f) for each text item of said at least one text item in said user linguistic data;	Braden 7:47-49 "each of the documents in the set is subjected to natural language processing, specifically morphological, syntactic and logical form, to produce logical forms for each sentence in that document." Braden *See, e.g.*, 11:62-14:61.	Kurtzman, II 3:49-50 "The content stream to be analyzed includes the specific files selected and viewed by the user." Kurtzman, II 5:31-41 "FIG. 9 shows the creation of content feature vectors from the content files in the content stream (block 620). Each content file in the content	See Salton 1968, p. 96 (Fig. 3-19), above. Salton 1968, p. 95 "The phrase finding process is completely straightforward and consists of matching the first component of a given phrase with each component of each word of a given sentence; the second phrase component is then matched, and so on." Salton 1968, p. 95 "After all phrases detected in a given document are entered into the chained list, this list is merged with the

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		stream is converted into individual words (block 910). Insignificant words such as HTML formatting tags (block 920) and stop words (block 930) are discarded. The individual words are then passed through a stemming procedure to obtain words and word-stems (block 940). The word and word-stems are counted to determine their frequencies (block 950). These frequencies are paired with the words and word-stems to create a multidimensional vector for each content file in the content stream (block 960)." Kurtzman, II, Figs. 6, 7, and 9.	concepts derived from other sources (for example, from the regular thesaurus), as previously seen in Fig. 3-16." Chislenko 4:40-50 "Ratings can be inferred by the system from the user's usage pattern. For example, the system may monitor how long the user views a particular Web page and store in that user's profile an indication that the user likes the page, assuming that the longer the user views the page, the more the user likes the page. Alternatively, a system may monitor the user's actions to determine a rating of a particular item for the user. For example, the system may infer that a user likes an item which the user mails to many people and enter in the user's profile and indication that the user likes that item." Dedrick *See, e.g.*, 3:37–4:9, 5:34–6:3, 6:53–8:19, 14:65–15:10, Abstract, Figures 1–8. Salton 1989, p. 388-89 "This reduces the analysis to a pattern matching system in which the presence of particular patterns in the input leads to corresponding output responses. . . . As mentioned in Chapter 9, pattern-matching techniques have been widely used in automatic indexing for the assignment of complex content identifiers consisting of multiword phrases. [23-25] In that case, syntactic class markers, such as nominal, adjective, and pronoun, are first attached to the text words. Syntactic class patterns are then specified, such as "noun-noun," or "adjective-adjective-noun," and groups of text words corresponding to permissible syntactic class patterns are

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			assigned to the texts for content identification.” Herz 12:55-64 teaches that textual documents may be profiled using word frequencies. “[A] textual attribute, such as the full text of a movie review, can be replaced by a collection of numeric attributes that represent scores to denote the presence and significance of the words . . . in that text. The score of a word in a text may be defined in numerous ways. The simplest definition is that the score is the rate of the word in the text, which is computed by computing the number of times the word occurs in the text, and dividing this number by the total number of words in the text.” Herz 13:24-27 teaches that, for the purposes of creating a profile, “one could . . . break the text into overlapping word bigrams (sequences of 2 adjacent words), or more generally, word n-grams.” Herz *See also* Abstract; 1:18-43; 27:47-49; 27:62-67; 4:49–8:8; 28:41–55:42; 55:44–56:14; 56:15-30; 58:57–60:9; Figures 1-16. Culliss 3:46-48 “Inferring Personal Data Users can explicitly specify their own personal data, or it can be inferred from a history of their search requests or article viewing habits. In this respect, certain key words or terms, such as those relating to sports (i.e. “football” and “soccer”), can be detected within search requests and used to classify the user as someone interested in sports.”

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(h) generating at least one user segment group, by the computer system, by grouping together identical segments of said at least one segment;	Braden 7:47-49 "each of the documents in the set is subjected to natural language processing, specifically morphological, syntactic and logical form, to produce logical forms for each sentence in that document." Braden Abstract "Each such document is then subjected to natural language processing to produce a set of logical forms. Each such logical form encodes, in a word-relation-word manner, semantic relationships, particularly argument and adjunct structure, between words in a phrase." Braden *See, e.g.*, 11:62-14:61.	Kurtzman, II 5:38-41 "These frequencies are paired with the words and word-stems to create a multi-dimensional vector for each content file in the content stream." Kurtzman, II, Figs. 6, 7, and 9.	See Salton 1968, p. 96 (Fig. 3-19), above. Salton 1968, p. 95 "The number of occurrences of a phrase in a given sentence determines the weight assigned to that phrase and is initially defined as the minimum number of occurrences of each of the phrase components in the sentence. If a phrase already entered in the chained list is detected, appropriately increased. Since a given text word may correspond to many concept numbers, it is theoretically possible that a single word may be responsible for the generation of a complete phrase; such a condition is not allowed, and care is taken to eliminate "phrases" where the several components are detected in the same word." Dedrick *See, e.g.*, 3:37–4:9, 5:34–6:3, 6:53–8:19, 14:65–15:10, Abstract, Figures 1–8. Kupiec 4:27-29 "Continuing with Example 1, suppose that the retrieved documents contain the following additional noun phrases in proximity to the noun phrase "New York City."" Kupiec 11:19-24 "In step 300 the input string is analyzed to determine what part of speech each word of the string is. Each word of the string is tagged to indicate whether it is a noun, verb, adjective, etc. Tagging can be accomplished, for example, by a tagger that uses a hidden Markov model. The result produced by step 300 is a tagged input string." Kupiec 11:28-30 "In step 310, which

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			comprises component steps 311 and 312, the tagged input string is analyzed to detect noun phrases. In step 315 the tagged input string is further analyzed to detect main verbs.” Kupiec 13:15-21 “The match sentences are analyzed in substantially the same manner as the input string is analyzed in step 220 above. The detected phrases typically comprise noun phrases and can further comprise title phrases or other kinds of phrases. The phrases detected in the match sentences are called preliminary hypotheses.” Kupiec 14:45-54 “Hypotheses are verified in step 260 through lexico-syntactic analysis. Lexico-syntactic analysis comprises analysis of linguistic relations implied by lexico-syntactic patterns in the input string, constructing or generating match templates based on these relations, instantiating the templates using particular hypotheses, and then attempting to match the instantiated templates, that is, to find primary or secondary documents that contain text in which a hypothesis occurs in the context of a template.” Belkin p. 402 “The knowledge sources are pattern-action productions: if the information on the blackboard matches the pattern of a knowledge source then its action can be executed. At any time, many knowledge sources are likely to have patterns that match the contents of the blackboard.” Herz 12:55-64 teaches that textual documents may be profiled using word frequencies. “[A]

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			textual attribute, such as the full text of a movie review, can be replaced by a collection of numeric attributes that represent scores to denote the presence and significance of the words . . . in that text. The score of a word in a text may be defined in numerous ways. The simplest definition is that the score is the rate of the word in the text, which is computed by computing the number of times the word occurs in the text, and dividing this number by the total number of words in the text." Herz 13:24-27 teaches that, for the purposes of creating a profile, "one could . . . break the text into overlapping word bigrams (sequences of 2 adjacent words), or more generally, word n-grams." Herz *See also* Abstract; 1:18-43; 27:47-49; 27:62-67; 4:49–8:8; 28:41–55:42; 55:44–56:14; 56:15-30; 58:57–60:9; Figures 1-16.
(i) determining a user segment count, by the computer system, for each user segment group of said at least one user segment group, each said user segment count being representative of a number of identical segments in the corresponding user segment group of said at least one user segment group, and linking each said user segment count to the corresponding user segment group of said at least one user segment group;	Braden Abstract "Each document that has at least one matching logical forms is heuristically scored, with each different relation for a matching logical forms being assigned a different corresponding predefined weight. The score of each such document is, e.g., a predefined function of the weights of its uniquely matching logical forms. Finally, the retained documents are ranked in order	Kurtzman, II 6:39-41 "[C]reating a multi-dimensional vector comprised of the words and word-stems mapped to their respective frequencies." Kurtzman, II, Figs. 6, 7, and 9.	See Salton 1968, p. 96 (Fig. 3-19), above. Salton 1968, p. 95 "If a particular phrase is found in a sentence, an appropriate entry is made in a chained list of concept numbers, similar in format to the list of concepts derived by the thesaurus look-up. This concept list is kept sorted by concept number, and each concept is stored together with its weight and with coded information identifying the given concept number as a phrase concept. A typical entry in the chained list is shown in Fig. 3-18." Salton 1968, p. 95 "The number of occurrences

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	of descending score and then presented to a user in that order." Braden 11:22-26 "Thereafter, through comparing the logical form triples for the query against those for each document, process 600 scores each document that contains at least one matching logical form triple, then ranks these particular documents based on their scores." Braden 17:44-53 "Of these triples, two are identical, i.e., "HAVE-Dsub-OCTOPUS". A score for a document is illustratively a numeric sum of the weights of all uniquely matching triples in that document. All duplicate matching triples for any document are ignored. An illustrative ranking of the relative weightings of the different types of relations that can occur in a triple, in descending order from their largest to smallest weightings are: first, verb-object combinations (Dobj); verb-subject combinations (Dsub); prepositions and operators (e.g. Ops), and finally modifiers (e.g. Nadj)."		of a phrase in a given sentence determines the weight assigned to that phrase and is initially defined as the minimum number of occurrences of each of the phrase components in the sentence. If a phrase already entered in the chained list is detected, appropriately increased. Since a given text word may correspond to many concept numbers, it is theoretically possible that a single word may be responsible for the generation of a complete phrase; such a condition is not allowed, and care is taken to eliminate "phrases" where the several components are detected in the same word." Dedrick *See, e.g.*, 3:37–4:9, 5:34–6:3, 6:53–8:19, 14:65–15:10, Abstract, Figures 1–8. Belkin teaches determining a user segment count through its scheduler. p. 402-404 Herz 78:47-50 "The method generates sets of search profiles for the users based on such attributes as the relative frequency of occurrence of words in the articles readby the users, and uses these search profiles to efficiently identify future articles of interest." Herz 12:55-64 teaches that textual documents may be profiled using word frequencies. "[A] textual attribute, such as the full text of a movie review, can be replaced by a collection of numeric attributes that represent scores to denote the presence and significance of the words . . . in that text. The score of a word in a text may be defined in numerous ways. The simplest definition is that the score is the rate

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	Braden 25:41-48 "Rather than using fixed weights for each different attribute in a logical form triple, these weights can dynamically vary and, in fact, can be made adaptive. To accomplish this, a learning mechanism, such as, e.g., a Bayesian or neural network, could be appropriately incorporated into our inventive process to vary the numeric weight for each different logical form triple to an optimal value based upon learned experiences."		of the word in the text, which is computed by computing the number of times the word occurs in the text, and dividing this number by the total number of words in the text." Herz 13:24-27 teaches that, for the purposes of creating a profile, "one could . . . break the text into overlapping word bigrams (sequences of 2 adjacent words), or more generally, word n-grams." Herz *See also* Abstract; 1:18-43; 27:47-49; 27:62-67; 4:49–8:8; 28:41–55:42; 55:44–56:14; 56:15-30; 58:57–60:9; Figures 1-16.
(j) sorting the user segment groups of said at least one user segment group, by the computer system, in an descending order of user segment counts starting from a user segment group having a highest user segment count, and recording said user segment groups and corresponding user segment counts in said user data profile; and	Braden Abstract "Each document that has at least one matching logical forms is heuristically scored, with each different relation for a matching logical forms being assigned a different corresponding predefined weight. The score of each such document is, e.g., a predefined function of the weights of its uniquely matching logical forms. Finally, the retained documents are ranked in order of descending score and then presented to a user in that order."	Kurtzman, II 6:12-13 "[C]reating a content data structure which indicates features of the content having particular characteristics." Kurtzman, II, Figs. 6, 7, and 9.	See Salton 1968, p. 96 (Fig. 3-19), above. Salton teaches sorting segment counts. See Salton 1968, p. 91 (Fig. 3-16)(Concept Nos.) Dedrick *See, e.g.*, 3:37–4:9, 5:34–6:3, 6:53–8:19, 14:65–15:10, Abstract, Figures 1–8. Belkin teaches determining a user segment count through its scheduler. p. 402-404. Herz 78:47-50 "The method generates sets of search profiles for the users based on such attributes as the relative frequency of occurrence of words in the articles readby the users, and uses these search profiles to efficiently identify future articles of interest." Herz 12:55-64 teaches that textual documents

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	Braden 11:22-26 "Thereafter, through comparing the logical form triples for the query against those for each document, process 600 scores each document that contains at least one matching logical form triple, then ranks these particular documents based on their scores." Braden 17:44-53 "Of these triples, two are identical, i.e., "HAVE-Dsub-OCTOPUS". A score for a document is illustratively a numeric sum of the weights of all uniquely matching triples in that document. All duplicate matching triples for any document are ignored. An illustrative ranking of the relative weightings of the different types of relations that can occur in a triple, in descending order from their largest to smallest weightings are: first, verb-object combinations (Dobj); verb-subject combinations (Dsub); prepositions and operators (e.g. Ops), and finally modifiers (e.g. Nadj)." Braden 25:41-48 "Rather than using fixed weights for each different attribute in a logical		may be profiled using word frequencies. "[A] textual attribute, such as the full text of a movie review, can be replaced by a collection of numeric attributes that represent scores to denote the presence and significance of the words . . . in that text. The score of a word in a text may be defined in numerous ways. The simplest definition is that the score is the rate of the word in the text, which is computed by computing the number of times the word occurs in the text, and dividing this number by the total number of words in the text." Herz 13:24-27 teaches that, for the purposes of creating a profile, "one could . . . break the text into overlapping word bigrams (sequences of 2 adjacent words), or more generally, word n-grams." Herz *See also* Abstract; 1:18-43; 27:47-49; 27:62-67; 4:49–8:8; 28:41–55:42; 55:44–56:14; 56:15-30; 58:57–60:9; Figures 1-16.

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	form triple, these weights can dynamically vary and, in fact, can be made adaptive. To accomplish this, a learning mechanism, such as, e.g., a Bayesian or neural network, could be appropriately incorporated into our inventive process to vary the numeric weight for each different logical form triple to an optimal value based upon learned experiences."		
(k) storing, by the computer system, said user data profile, representative of an overall linguistic pattern of the user, in the data storage system, said overall linguistic pattern substantially corresponding to the user's social, cultural, educational, economic background and to the user's psychological profile.	Braden 7:19-23 "Generally speaking and in accordance with our present invention, we have recognized that precision of a retrieval engine can be significantly enhanced by employing natural language processing to process, i.e., specifically filter and rank, the records, i.e., ultimately the documents, provided by a search engine used therein." Braden *See, e.g.*, 11:62-14:61.	Kurtzman, II 3:47-49 "These specific files selected and viewed by the user are recorded by the affinity server." Kurtzman, II 3:21- 23 "User profiling uses content stream analysis, as well as demographic, geographic, psychographic, digital identification, and HTTP information."	See Salton 1968, p. 96 (Fig. 3-19), above. Salton 1968, p. 91 "After dictionary look-up, weight assignment, and the merging of concepts derived from various sources, the document is reduced to a merged concept vector, as shown for a typical document in Fig. 3-16." Chislenko 4:15-18 "For example, the system may assume that Web sites for which the user has created "bookmarks" are liked by that user and may use those sites as initial entries in the user's profile." Chislenko 4:40-50 "Ratings can be inferred by the system from the user's usage pattern. For example, the system may monitor how long the user views a particular Web page and store in that user's profile an indication that the user likes the page, assuming that the longer the user views the page, the more the user likes the

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			page. Alternatively, a system may monitor the user’s actions to determine a rating of a particular item for the user. For example, the system may infer that a user likes an item which the user mails to many people and enter in the user’s profile and indication that the user likes that item.” Dedrick 3:54–4:4 “The GUI may also have hidden fields relating to "consumer variables." Consumer variables refer to demographic, psychographic and other profile information. Demographic information refers to the vital statistics of individuals, such as age, sex, income and marital status. Psychographic information refers to the lifestyle and behavioral characteristics of individuals, such as likes and dislikes, color preferences and personality traits that show consumer behavioral characteristics. Thus, the consumer variables refer to information such as marital status, color preferences, favorite sizes and shapes, preferred learning modes, employer, job title, mailing address, phone number, personal and business areas of interest, the willingness to participate in a survey, along with various lifestyle information. This information will be referred to as user profile data, and is stored on a consumer owned portable profile device such as a Flash memory-based PCMClA pluggable card.” Dedrick *See, e.g.*, 3:37–4:9, 5:34–6:3, 6:53–8:19, 14:65–15:10, Abstract, Figures 1–8. Belkin p. 399 “In the general information seeking interaction, the IR system needs to

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			have (see Table 1 for a brief listing of the ten functions and their acronyms): a model of the user himself, including goals, intentions and experience (UM)." Belkin p. 403 "For I^3R to be adaptable, it must be able to assess the user's abilities so it can adjust the interface to match them.[22] This requires a user model builder. As each user may have his own view of the subject area being searched, it would be valuable to capture this information and remember it from session to session in a domain knowledge expert." Herz 27:62-66 teaches generating user profiles based on a wide variety of attributes. "In a variation, each user's user profile is subdivided into a set of long-term attributes, such as demographic characteristics, and a set of shortterm attributes that help to identify the user's temporary desires and emotional state." Herz 20:35-37 "User profiles may make use of any attributes that are useful in characterizing humans." Herz 11:31-38 "written response[s] to Rorschach inkblot test," "multiple-choice responses by [the person] to 20 self-image questions," as well as "their literary tastes and psychological peculiarities." Herz 32:39-49 "A second function of the proxy server is to record user-specific information associated with user U. . . . All of this user-specific information is stored in a database that is keyed by user U's pseudonym (whether

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			secure or non-secure) on the proxy server.” Herz 66:65-67; 67:1-3 “The system uses the method of section ‘Searching for Target Objects’ above to automatically locate a small set of one or more clusters with profiles similar to the query profile, for example, the articles they contain are written at roughly an 8th-grade level and tend to mention Galileo and the Medicis.” Herz *See also* Abstract; 1:18-43; 27:47-49; 27:62-67; 4:49–8:8; 28:41–55:42; 55:44–56:14; 56:15-30; 58:57–60:9; Figures 1-16. Culliss 3:46-48 “Inferring Personal Data. Users can explicitly specify their own personal data, or it can be inferred from a history of their search requests or article viewing habits. In this respect, certain key words or terms, such as those relating to sports (i.e. “football” and “soccer”), can be detected within search requests and used to classify the user as someone interested in sports.”