Dynamically Computed Function of User Input Search String Character Count" herein incorporated by reference, may also be used to rank and/or order the sets of items. The ranking and/or ordering of items can be used to boost certain items expected to be of interest to the user. Thus, although a particular user-entered search string may have a relatively high total penalty, if the prefixes containing errors are matched with error-resilient entries in the inverted list that are associated with particularly popular or relevant items, these items can be presented as results to the user.

[0038] For example, the user may be searching for the movie "The Merchant of Venice". The user knows the movie involves the actor Al Pacino playing the role of "Shylock". Thus, the user enters the search string "shyl pcno" for the descriptive terms "Shylock" and "Pacino". The dynamic intersection uses the combined information associated with these two terms to find the item of interest to the user. To further illustrate, the descriptive term "Shylock" can be associated with the items "William Shakespeare", "money-lender", "The Merchant of Venice", and "Laurence Olivier". The descriptive term "Pacino" can be associated with the items "The Godfather", "Michael Corleone", "Scent of a Woman" and "The Merchant of Venice". Thus, when these sets of items are intersected, the item "The Merchant of Venice" is in common to both descriptive terms, and it is presented to the user.

[0039] FIG. **5** illustrates an embodiment of the invention using a trie data structure where each node (e.g. node **501**) has numerical values from 0-9. The numerical value of each node represents an alphanumeric character input by the user that has been encoded according to the numerical encoding scheme employed when creating the encoded inverted list in connection with step **304** of FIG. **3**. Each node has associated top M items of interest **502** that have descriptive terms and/or prefixes, encoded as described above, that match the numerical value of the node. Likewise, sequential node combinations (such as **501** and **503**) have associated top M items of interest that have encoded descriptive terms and/or prefixes that match the combined numerical values of the nodes. These top M records can be held in "in-memory" storage on the user's interface device. These records are returned immediately to the user based on the match string. If the user does not find the desired item in the top M records, additional items are retrieved from a secondary storage structure **504** using the trie data structure present there or a dynamic intersection.

[0040] FIG. **5** shows the layout of the data structure for the terms "TOMMY BOY" using a keypad of the type shown in FIG. A. The number of prefix terms and the size of the prefix terms used for pre-computing the trie index are determined by the memory availability and computational capabilities of the system. In the illustration, the size of the prefix terms is 2 and the number of terms for pre-computing the trie index is 2. Thus, the user may enter a variety of encoded prefix strings to search for items associated with the terms "TOMMY BOY", e.g., "8 269" (T BOY), "86 269" (TO BOY), "8 2" (T B), and "86 2" (T BO).

[0041] The user starts the search by entering the numeral "8", which corresponds to the letter "T" on the keypad of FIG. A. The system immediately returns top M records **502** matching the "T" prefix. Next, the user can choose to enter more characters of the first prefix by entering the numeral "6" for the letter "O" or the user could begin a new prefix by entering the numeral "0" for a space character (at node **503**) followed by a "2" for the letter "B" (at node **505**). In this case, top M records for the prefix combination "T_B" would be returned (not shown). In addition, because the user has entered more than one term prefix, the system can perform a dynamic intersection on the two terms.

[0042] If the user enters a "6", the system returns top M records **506** having associated descriptive terms matching the prefix "86". As above, the user can choose to enter more prefix characters for the term "TOMMY", following nodes **507** through **508**, and then begin to enter the prefix for the term "BOY" (represented by nodes not shown at **509**). In the alternative, the user can enter a "0" for a space character (at node **507**) and begin to enter prefix characters for the term "BOY", starting at node **510**. With each entry, the system responds with items from the top M records, items from the secondary storage, and/or items from a dynamic intersection as described above.

[0043] The embodiments described above provide error-resilience by applying the error models disclosed to the descriptive terms and phrases on a pre-computed basis. However, other embodiments of the invention provide for applying the error models disclosed on the user input in real time. For example, error-resilient variants of the user input can be formed using the techniques described above, and these variants can be matched against a catalog of descriptive terms and phrases in order to find desired content items. For some of the techniques, the inverse operation of the technique would be performed on the user input, e.g., the ambiguous numeric user input would be decoded into the possible unambiguous alphanumeric string combinations. Yet further embodiments include applying the disclosed techniques in a combined fashion with some of the techniques being applied on a pre-computed basis, while others are performed in real time.

[0044] Embodiments can have mapping logic that cooperates with a database containing content items and descriptive terms and phrases to identify content items most likely to be of interest to the user based on the user's search input. This mapping logic can perform a database lookup given a particular search input string, and the logic can handle variants of the search input string and/or variants of the descriptive terms and phrases created according to the error models described above. For example, the mapping logic can generate input string variants in real time according to the error models provided above and use these variants to perform a database lookup. Likewise, the mapping logic can use an input string to perform a database lookup in which the database contains pre-computed variants of descriptive terms and phrases created according to the error models. In either embodiment, the mapping logic handles variants and performs a database lookup to determine the most likely content items sought by the user.

[0045] Embodiments of the invention can be used with devices that have a physical keypad with overloaded keys or with virtual keypads having overloaded keys. U.S. patent application Ser. No. 11/509,909, filed Aug. 25, 2006, entitled "User Interface For Visual Cooperation Between Text Input And Display Device", herein incorporated by reference, describes systems and methods for entering text into a search interface using an image of a virtual user alphanu-