

TABLE 3-continued

Limited Syntax System	
Sequence of spoken phrases	Corresponding Actions Performed by Char Tool
"glaucoma"	/*select button*/
"left eye"	/*select item in choice list popup menu for glaucoma*/
"finished"	/*close choice list popup menu*/
"sinus"	/*select button*/
"right side"	/*select item in choice list popup menu for sinus*/

With the expanded list of legal syntaxes, the end user can enter the same data by saying:

TABLE 4

Expanded Syntax System	
Sequence of spoken phrases	Corresponding Actions Performed by Char Tool
"history"	/*select history form section*/
"h e a r t"	/*selection subsection for ears, eyes, nose and throat*/
"glaucoma in the left eye"	/*select button, then select item in choice list popup menu for glaucoma, then close choice list popup menu*/
"sinus with pain on the right side"	/*select button, then select item in choice list popup menu for sinus*/

The advantage of this approach is that the interaction is simpler and quicker because it skips one level of menu selection. A possible disadvantage is that it provides the end user with less guidance about what to say. However, since the system supports both data entry methodologies, end users with less experience can use the more methodical approach while more experienced users can be more efficient.

While the present invention has been described with reference to a few specific embodiments, the description is illustrative of the invention and is not to be construed as limiting the invention. Various modifications may occur to those skilled in the art without departing from the true spirit and scope of the invention as defined by the appended claims.

What is claimed is:

1. A system for facilitating the conversion of paper based data entry forms to fully reusable electronic computer based data entry forms to specifying data to be stored in a database, said database storing data in records each having a plurality of fields, said system comprising:

a scanner for scanning an existing data entry form and for generating a digitized representation of said data entry form; said digitized representation including color information;

a display for displaying images;

a form definition data structure for storing data representing said scanned data entry form;

a memory for storing a set of form definition procedures for defining an electronic computer-based data entry form, responsive to user commands, said form definition procedures including

an imaging procedure for displaying on said display at least a portion of said scanned data entry form;

a region definition procedure for enabling a user to indicate regions of said displayed data entry form; and

object definition procedures for enabling said user to define a multiplicity of objects, said objects corresponding to ones of said regions and including form sections, text boxes, and checkbox buttons, and for specifying properties of said defined objects;

said specified properties including (A) links for linking selected ones of said defined objects to respective specified fields in said database, and (B) exclusionary relationships for specifying which of said objects cannot be selected by end users when specified others of said objects have previously been selected by said end users; and

said object definition procedures storing in said definition data structure form definition data corresponding to said user defined objects and user specified object properties; and

a data processing unit for executing said stored form definition procedures;

wherein said electronic computer based data entry form is suitable for repeated use for specifying data to be stored in said database;

said form definition procedures including:

color recognition procedures for utilizing said color information, said color recognition procedures automatically defining ones of said objects and specifying ones of said properties of said objects based on said color information, including:

for each region of said digitized representation of said data entry form enclosed by a colored border of a first predefined color, automatically defining a form section having physical dimensions corresponding to the position of said color border in said digitized representation of said data entry form;

for each region of said digitized representation of said data entry form highlighted with a second predefined color, automatically defining a checkbox button object having physical dimensions corresponding to the extent of said highlighted region in said digitized representation of said data entry form; and

for each region of said digitized representation of said data entry form highlighted with a third predefined color, automatically defining a text box object having physical dimensions corresponding to the extent of said highlighted region in said digitized representation of said data entry form;

said color recognition procedures storing in said definition data structure form definition data corresponding to said automatically defined objects.

2. The system of claim 1,

said color recognition procedures including a text label definition procedure, invoked automatically when defining an object corresponding to a region of said scanned data entry form demarcated by a predefined color, for performing image to text conversion in said demarcated region so as to generate a text label for said automatically defined object; and

said electronic computer based data entry form generated by said form definition procedures including at least a portion of said digitized representation of said paper based data entry form.

3. A system for facilitating the conversion of paper based data entry forms to fully reusable, voice activated electronic computer based data entry forms for specifying data to be stored in a database; said database storing data in records each having a plurality of fields, said system comprising: