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Hypertext as a Host for an Augmentative Communication System

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A Database for Storing Conversational Material

One approach to improving augmentative communication systems for severely impaired non-speaking people is to incorporate the ability to store and recall reusable conversational texts, varying in size from a phrase to an entire narrative.

A demonstration of such a system has been developed using commercially available database software to store the conversational material, and a program which manages the database and presents the user with an interface appropriate for conducting a conversation [2]. We are currently working to enhance this system with the ability to link stored items semantically at a deeper level than by using key words [5].

Modelling the associative linking of ideas

We are also exploring the potential of hypertext as a host for this type of system. Hypertext is a method for storing and navigating through information which purports to be based on the manner in which the human mind stores and accesses information using highly flexible associative links [3]. A hypertext system consists of nodes, each of which can be linked to any other node to create an association between them. Any cross-referencing in documents can be considered as a prototype of hypertext, but the provision of a rich network of such associations on a computer with interactive capabilities gives hypertext its real character. Hypertext could thus be a good candidate for hosting a text-based conversation aid, by modelling the flexible way in which the mind stores and recalls conversation items.

Modelling step-wise topic shifts in conversation

Hypertext's capacity for creating associative links between items could also be useful in modelling parts of the conversational process itself, thereby assisting the augmented speaker by anticipating their conversational needs. In topic-based conversation, a participant moves to another topic in the conversation, by making either a 'boundaried' or a 'step-wise' topic shift [4]. A boundaried shift is made with key phrases which indicate that an abrupt change to an unrelated topic is about to be made. A step-wise move is more common, whereby a move is made to a topic which is clearly related to the present one. In an augmentative communication system, boundaried shifts of topic may be assisted with a store of ready remarks appropriate to this sort of move. We are exploring the potential of a hypertext system for the more difficult task of helping an augmented speaker to effect step-wise topic moves efficiently within a store of conversational material.

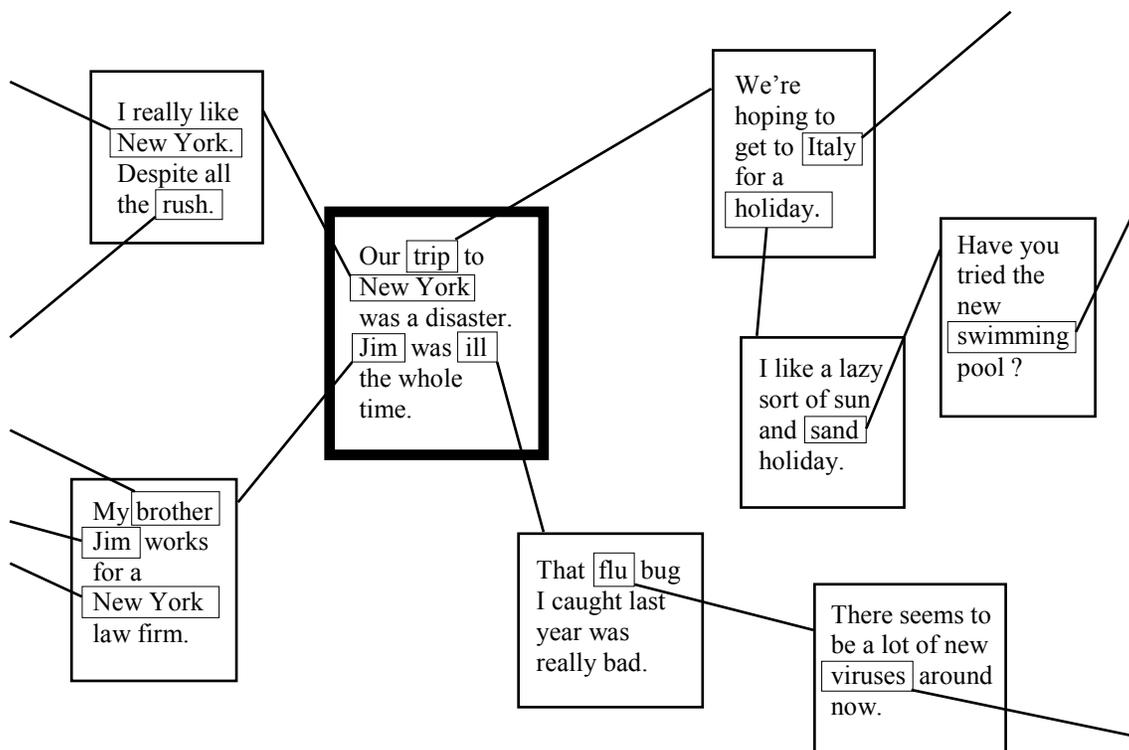
Structure for a prototype system

The diagram below shows the way stored text items may be linked in a hypertext system. The text outlined in black is the one which the user is currently speaking. As well as carrying on with the next part of this particular narrative (not diagrammed), the user may choose to branch off to related texts in a flexible way, as shown. Note that this is not linking by means of key words, as in a conventional database. Words are shown in boxes merely to show the semantic nature of the hypertext link.

The user interface for the prototype system will include candidate texts for speaking, navigation methods for moving to other texts, and a predictive feature. Also there will be the capability to give rapid feedback to another speaker, as is possible with the previously developed CHAT system [1].

Two prototype hypertext-based augmentative communication systems are under development. One is being jointly designed with a non-speaking person who will use it in trials, and the other is part of a collaborative research venture

with a psychologist, on conversation with restricted choices. Preliminary results suggest that hypertext may offer significant advantages as a host for a text-based communication system.



Portion of a hypertext conversation store

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