8-th International PEG Conference, Sosopol, 1997, 408-410

MMLS: MultiMedia Learning System

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MMLS - a multimedia learning system is presented in this paper. It supports the learning process in a network environment and provides tools for multimedia entering, storage, retrieval and report generation.

1. Introduction

The world-wide networks and the information superhighways allowing rapid transmission of digital multimedia information to any user in any time, offer a ground for a new educational reform that would prepare the citizens to live in the Information Society.

Using the advance information technology in education [McClintock, 1992], the telecommunication technology [Stanchev and Sabev, 1990], multimedia databases [Ghafoor, 1995, Samet, 1995, Stanchev et al. 1992] a MultiMedia Learning System (MMLS) was developed. The user collects data through Internet, store them in a multimedia database on his/her own computer, and prepare multimedia report on different subjects using the stored data.

2. The MMLS Overview

Figure 1 illustrates the system architecture.

PHASE	PROCESS	RESULT
1 Input multimedia information through Internet	Netscape browsing	Text data Image data Audio data Video data
2. Store data	Data indexing	Text database Image database Audio Database Video Database
3. Retrieve data	Query processor	Text data Image data Audio data Video data
4. Report generation	Query processor & Statistical processor & Word processor & Spread shit & Multimedia tools	Report

Step 1. Input multimedia information through Internet

The user searches multimedia data, using Netscape package on some topic.

Step 2. Store data

The data are indexed. Text data are indexed as a set of attributes and values. Image data are index as: a set of attributes and values, colour histogram, values of texture parameters, values of object shape parameters**.** Audio data are indexed with a set of attributes and value.

Video data are characterised with a set of attributes and values, colour histogram, values of texture parameters, values of object shape parameters for a group of image items.

Step 3. Retrieval data

The user can ***retrieval / browsing: by attributes*** (for all kind of data); ***by colour similarity*** (using a library of predefined image templates (such as sunny sky, sea, beach, forest, etc.) for image and video data), ***by shape similarity*** (drawing sketch of the search object for image and video data) , ***by texture similarity*** (using a library of predefined image templates for image and video data), ***by sound similarity*** (using a library of sounds for video database).

Step 4. Report generation

The user can prepare multimedia reports using the stored data through the query processor, analysed them with the help of powerful statistical processor and spread shit; write text with word processor; prepare the final report with the help of multimedia creation product.

3. Conclusion and future work

The main characteristics of the MMLS system could be summarised as follow:

b.) the system is based on similarity retrieval;

c.) the system language is a sophisticated window-based graphical interface;

d.) the user interface supports the visual expression of query and allow query refinement and manipulation of the results;

e.) the query for each retrieval class is based on schemes that are both natural and efficient for specifying query in the corresponding class;

f.) the system has a reasonable generality to deal with different application areas;

g.) different kind of packages are working together in the system.

The system is under development on IBM PC using Borland C++ under Windows 3.1.

4. Acknowledgement

This project is partially supported by the project I - 531/95 of the National Foundation for Science Research of Bulgaria.

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