A DIGITAL ART-IMAGE DATABASE USING MICROSOFT ACCESS

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Abstract

The aim of the computer program so called ArtShow, is to develop an easily distributed programming tool providing storage, communication and presentation services required by art community.

ArtShow has a lot of sophisticated features for making interactive presentations to audience such as search and retrieve via keywords, zooming of paintings, an outliner to help in organizing the presentation and the data entry of a usual database. For presenting the program, we prepared an example image database based on the art collection of the National Bank of Greece.

1. Introduction-description of the package

Although enthusiastically welcomed by the film and broadcasting industries, computers have not been readily accepted by most of the art community. Although having enormous potential as visualizing tools, part of the art community is somewhat perplexing. It is certainly true that the liaison between art and technology has not been an easy one. Furthermore, due to strict business programs only a few art historians and art educators can follow and update their knowledge regarding available programs and techniques.

 Today, the wide availability and portability of personal computers and very sophisticated programs invite art historians to work directly on their own computers, so that intermediaries are no longer required. Furthemore, there is still a need for art historians and teachers to work beside programmers, in order to improve the familiarity and the simplicity of the user interface of art software.

The reasons for this are:

- New and unfamiliar users often feel uncomfortable and daunted by new technologies.

- Up until now, art historians and computers have made up a rather unfamiliar field.

- Most visitors of museums do not read the instructions and information cards for handling the computer systems.

ArtShow, is a digital art-image database for archiving, presentation and retrieval of art-works. The platform of the system is Microsoft Access[1], a commercially available general purpose, object oriented relational database working under the operating system Windows[2]. The user interface, which drives the two-way communication with the database, has been developed by Macromedia Authorware Pro[3] (ver. 5) which is a platform for multimedia applications developing. In cases

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[1] Microsoft Access is a trademark of Microsoft Corporation.

[2] Windows and Windows Multimedia extensions are trademarks of Microsoft Corporation.

[3] Authorware Pro is a registered trademark of Macromedia Inc.

where the tools provided by Autrhorware were not adequate for the specific application, we added function libraries (DLLs) written by Borland Delphi 4.0[4]. Some special features of the system are:
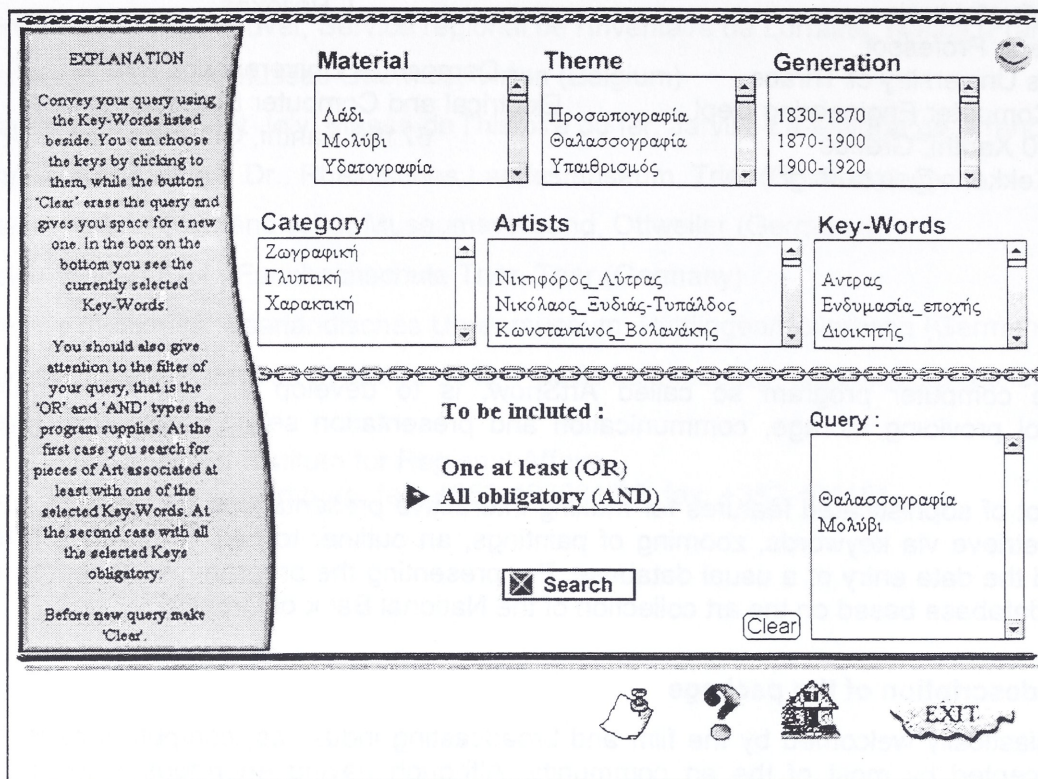

Figure1: The main window (queries)

1. Handling of multimedia information in a uniform way.
2. Data security
3. Multiple image display.
4. Automatic database installation.
5. Selection of the user language (Greek and English).

The idea about the program was to create an easy search interface on a database, containing art information, which visitors or art historians could handle easily. The Access database is very common in computer systems working under Windows and is used in many museums for various projects. The indexing of the images became by keywords but we continue experimenting using different methods as content based retrieval. Using just the Access the available data (images, text, keywords) can be stored in shells and forms of the database but the problem is that all these can be reached only by programmers. Authorware is a platform for hypermedia applications and can be connected with Access. A user interface is designed with it so that users of the database can find all the information about the available data using just buttons and scroll-bar menu(fig. 1). Since Authorware is not designed for the particular needs of art community some additional essential features have been added using the Delphi language, such as zooming and SQL type screens to help them in detailed examination and advance searching the database. The degree of zooming is depend on the resolution of scanning the images. The SQL type query is depends on the particular collection.

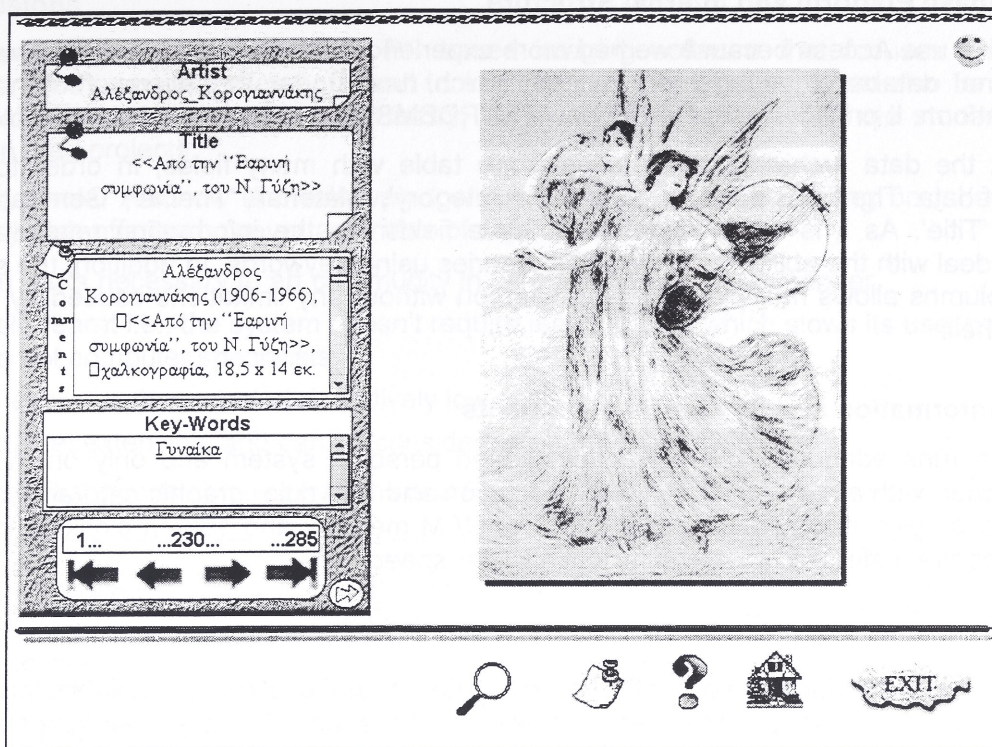[4] Borland Delphi is a trademark of Inprise Inc.

Figure 2. A capture of the displaying window

All these features are common in similar museum application. A common disadvantage of them is that if someone wands to set up a particular presentation the series of appearance of the data can' t be changed since it depends on the indexing of the database. To solve this problem, additional features have been added to ArtShow so that it can be used in similar way as the very known program PowerPoint. The difference with it is that instead of introducing the data of the particular presentation one each time, users of Atshow can use the search interface of the program to locate part of the collection of the museum and after that can manipulate the series of appearance in the same way PowerPoint does (i.e. dragging slide icons from Slide View). The final presentation in this way is interactive since all special features of the ArtShow can be used.

It is of particular importance that ArtShow can be considered as an 'open' system, in the sense that it can be used as a software tool for archiving medium image-databases. It allows the user to easily add new material and to manipulate the old one as well. It can also delete its contents and be host to a completely new job. From the user point of view, this operation has nothing to do with programming language. In addition, a system of labels, hints, messages, text entries and buttons offer him an easy and secure way of managing data and utilizing his thoughts.

Information in ArtShow is organized as a knowledge base according to a specifically developed quite simple user interface. ArtShow's windows (like figure 1 and 2), includes buttons and scrolling menus for the management of the input data, as well as user programmable buttons for the presentation of related information.

ArtShow can be used by the visitors of a museum to find information on the collection (or part of it) if the program is housed in a position somewhere in it. The art historians of a museum can use the program

- to examine in-depth information of the any object (or group of them) using the search tools
- to make presentations on part of the collection in similar way as the PowerPoint program
- to prepare multimedia titles like the Authorware program.

2. The Database Platform and internal Structure

We decided to use Access because we had more experience with it. Access is such a widely used truly relational database management system which runs under the Microsoft Windows user interface platform. It provides users with a powerful RDBMS able to handle relational tables.

As we look the data archiving, there is only one table with many fields, in order to help the managing of data. The fields are: 'Code', 'Text', 'Category', 'Material', 'Theme', 'Generation', 'Key', 'Artist' and 'Title'. As it is easily understood these fields are the information related with each picture and deal with the ability of making SQL queries using keywords. In addition, the simple text format of columns allows multiple language insertion without any limitations caused by the Greek or English shell.

3. General Information and System Requirements

The program runs adequately on a Pentium based personal system and only on Windows 95 platform or later, with at least an 800 x 600 resolution and true color graphic card and monitor. As a multimedia project, it requires at least 32MB of RAM memory and 166Mh clocking in order for database's cache buffers to provide sufficient transfer speed.

4. Features

The program user interface is very intuitive, with most operations being available through push buttons and menu commands. The piece's image can be seen in a variety window size ranging from 100% to the biggest size you find suitable (in such a case, vertical and horizontal rolling bars are activated) and automatically adaptive resolution. On the other hand, you can reduce the window size from 100% to a canvas size of few pixels.

The system provides various operating modes. It can be used for administrative purposes or presentation (in part or as a whole) of the collection of a museum or by individual collectors. It can also be used for publishing titles for CD-ROM's.

From a general scope, this program has many similarities with other databases and presentation developing programs, as Microsoft Access and Power Point. Thus is why a comparison between them can be useful. Generally speaking the program is suitable for image archiving and creating simple multimedia titles. The main advantage of it is that it allows development of interactive presentation based on image databases providing data searching, zooming. It requires short learning time and low disk space.

On the other hand the program is not allowing variations in the presentation because of the standard layout appearance and it can't offer the flexibility of a usual database except through the programming mode.

By understanding the advantages and disadvantages of the program (table 1), the user can find the cases where he can it use it instead of the above mentioned programs.

5. Future Developments

Future work will concern, among others, the following topics :

- The capability of the input and output of images from devices commercially available (CCD cameras, scanners).
- The capability of network publishing.
- The use of video and sound along with images and text.
- The design of an "Insert" command so that outlines from other application program such as Microsoft Wold or PaintBrush can be inserted during the preparation of presentation.

6. Conclusions

The present system offers a simple PC based imaging software that focuses on museums, galleries and other organizations of small to medium size. This software can also be used as an educational and teaching tool in Art History, or as a distributed tool to help students and art-workers on their projects.

Seen as a whole, ArtShow is a relatively low cost simple prototype running on today's average personal system offering however a number of capabilities including :

- Perform tasks necessary to art community in an effective and rapid manner.
- It is easily learnt i.e., the system doesn't require learning time which slows its use by people who are not computer specialists.
- Can be easily implemented at a relatively low cost.
- It is portable, extensible and can be considered as an "open" system.

Furthermore, it supports communications and file interchanges and tools for use in education.

	ArtShow	Access	PowerPoint	Authorware
Retrieval speed	***	****	**	***
Zoom	****	-	-	*
Easy to learn	***	**	****	*
Easy to set up (or change) a presentation	****	**	***	*
Multimedia capabilities	*	***	**	****
Data security	***	****	-	-
Database flexibility	***	****	-	*
Preparation of multimedia titles	**	*	-	****
Presentation flexibility	***	*	**	*

Table 1: The advantages and the disadvantages of the ArtShow in comparison with related programs.

References

1. Microsoft Access 97, "Step by step", Catapult, Inc.,1997.
2. "Mastering Delphi 4" SYBEX Inc., 1998.
3. Microsoft PowerPoint Handbook, Macromedia Inc.,1995.

PROFILE

Dr. Gerassimos Kekkeris received the B.Sc. degree in Physics from the Aristotelian University of Thessaloniki and a Ph.D. degree in Control Engineering from D.U.TH. in 1977 and 1990 respectively. He is currently Asst. Professor at the Image Analysis and Multimedia Group. His research interests include Control Engineering, Signal Processing and Multimedia.

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