book proposal (28/10/2002)

title: introduction multimedia
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status: manuscript
online: www.cs.vu.nl/∼eliens/media

I. Prospectus

1. Brief description

From the preface:

> *This book provides a concise and comprehensive introduction to multimedia. It arose out of the need for material with a strong academic component, that is (simply) material related to scientific research.*
>
> *The themes and variations addressed in this book may be summarized as follows.*
>
> themes and variations
>
> - digital convergence
> - broadband communication
> - multimedia information retrieval
>
> *To explain in somewhat more detail,* digital convergence *may be characterized as the coming together of data (including audio, video and information) in a possible multitude of platforms, to which these data are delivered by a variety of (broadband) communication channels. In fact, the increasingly powerful communication infrastructure due to the popularity of the Internet and the World Wide Web, leads to an almost universally accessible multimedia (information) repository, for which (unfortunately) the notion of (multimedia) information retrieval seems to have occurred only as an afterthought.*
>
> *An underlying thought that motivated the writing of this book is that somehow the gap between* authoring *and* retrieval *should be bridged. In other words, either by developing the technology for extracting features or attributes from multimedia objects, or by applying content annotation for such objects, multimedia information retrieval should be considered as a necessary asset to make a multimedia web an effective information repository.*

This book aims at giving a concise (less that 150 pages) introduction to multimedia, covering the themes mentioned above. It can be used either for self-study or as material for presentation in class. In the book an overview is

given of concepts and technology that are present in multimedia practice and research. In addition, numerous hints are given for further reading, research and student projects.

2. Outstanding features

- The material is available online, and includes a presentation-ready 'slide format' See below.
- A distinct advantage of the book, over the competition, is that it is short. The text will not exceed 150 pages. Any of the other books is 400-500 pages, at least. In my experience, no student has the patience (nor the ability) to read that all.
- Although the book is meant for first year students, it is not limited to that audience. The level of the students is of more importance when considering how to take the exam. The text contains sufficient references to other material to be user for higher level students, or even research students and professionals. To assist the instructor, a number of questions are included (organised wrt. insight, conceptual knowledge, and detailed knowledge of technology and facts). There is also a sample of lectures, with a brief explanation.
- Since the course, as I taught it, also included a practical assignment, the online version contains a manual for Macromedia Director, in the same format as the text.
- For many sections a *research directions* section is included, discussing topics for further reading or projects.
- The book is (so to speak) 'a book with an attitude', it is slightly authorative and directive towards the students, telling them to learn the facts and 'do the exam'. Some students take refuge to learning the 'keywords and phrases'. They are even helped in this respect, since the text uses a 'graphic' layout to emphasize important point, and to allow for a quick recognition of chunks of relevant material.

The book collects material from a variety of sources. The authors own research is only discussed in chapter 7, and some parts of chapter 6. Also included are a number of research directions sections, these provide suggestions for projects and future research.

The suggested lectures do not all follow the linear structure of the text, but may take parts at will. For example, with an eye on the practical assignments, section 2.3 will usually be dealt with before discussing chapters 1 or 2 in any detail.

In summary: The book offers a concise (max 150 pages) introduction to multimedia, a field that is gaining academic interest rapidly. It fills a gap in the existing literature, by giving a broad overview and references to research and

development in the areas of interest. It provides online material (also on CDROM) to assist the instructor in presenting the course and allowing students to explore further references. It has a distinct style, that meets academic standards.

slides format Using my experience in writing the OO book, I again adopted the so-called 'slides' as a means to take text from the book for presentation. Let me explain that in somewhat more detail: a slide is a piece of text, a list, table or figure, that (using some tools) is taken out of the text and presented. The advantage of this approach is that the relation between slides and the text is immediate, which is not the case with other presentation formats. In contrast with the OO book, however, where the slides were made explicit by boxes in the text, I now use an implicit slide mode, to allow for more continuous text. The use of slides is, however, reflected in the text by what may be called a graphical or short hand style, using layout and brief bulleted phrases instead of long passages of text.

3 Competition

There are a number of other books in the field that might qualify as a book for the kind of course my book is intended for. Some of the comments, which are all in shorthand, are repeated elsewhere in this proposal. (The complete references are given at the end.)

Multimedia – Making It Work

+ used at Univ of Amsterdam
- unwieldy, colloquial, sub-academic

Dust or Magic

+ nice, lot of feeling for the field
- chaotic, full of cheap advice to the 'talent', sub-academic

Principles of Multimedia Databases

+ excellent, highly academic, good ideas + formalization
- too database oriented (SQL), too many technical details, too much irrelevant material

Understanding networked multimedia

+ broad coverage, well-structured, reasonably well written
- too technical, too much material, slightly outdated

Handbook of Multimedia Information management

+ good material, in-depth
- collection of articles, difficult to adapt for presentation

The Computer in the Visual Arts

+ well-written, from artist's viewpoint
- too narrow, and too many details

Further, these are all 500 pages+ books. None, with the exception of Principles of Multimedia Databases has material for educational purposes.

In comparison, in the same brief way I could characterize my own book:

A (not so) gentle introduction to multimedia

as

+ concise, broad overview, excellent thematic focus
- sometimes cryptic, requires study of reference

with the additional remark that it is only about 100 pages, and contains all the material discussed in the book in a presentation ready format. (The teacher has the choice between dynamic HTML and VRML.)

references

Making T. Vaughan, *Multimedia – Making It Work,* Osborne/McGraw-Hill, 1998 4th edn

Magic B. Hughes, *Dust or Magic – Secrets of Successful Multimedia Design,* Addison-Wesley, 2000

MMDBMS V.S. Subrahmanian , *Principles of Multimedia Databases,* Morgan Kaufmann, 1998

Networked F. Fluckiger, *Understanding networked multimedia – applications and technology,* Prentice Hall, 1995

Handbook W. Grosky, R. Jain, R. Mehrotra (eds), *The Handbook of Multimedia Information Management,* Prentice Hall, 1997

Computer A.M. Spalter, *The Computer in the Visual Arts,* Addison-Wesley, 1999

4. Apparatus

The book covers the theoretical part of the Introduction Multimedia course. The online version gives a skeleton assignment that may adapted by the one responsible for a similar course.

The online version contains all the material needed for presentation, including:

- presentations for all chapters, including the preface in dynamic HTML and VRML slides

- a manual for Macromedia Director, also available in presentation format
- presentable versions of the MPEG-4 standard, and other relevant material
- possible exam questions, with back links into the text for quick learning and review
- seven sample lectures, with additional explanation for the instructor

5. Audience

- students (beginning and advanced)
- teachers and professors
- professionals and interested laymen

The course notes were explicitly written for first year Computer Science and Information Science students. (The Information Science students are expected to choose the specialisation Multimedia and Culture, a curriculum provide by the Division mathematics and Computer Science of the Faculty of Science of the Free Universityof Amsterdam).

The course has a practical part and a theoretical part. which in combination takes 2-4 weeks, full time study.

How would the the potential category of users/buyers look at the book?
students:

+ compact, quick overview, few irrelevant details
+ exam can be learned by clicking on questions in checklist
- somewhat abstract, guidance or reference lookup is needed

instructors:

+ concise, well-structured overview, in presentation-ready form
+ provides full course, and skeleton practical assigment
+ skeleton exams, with backlinks for review
+ additional references to other material
- unusual style of formatting and presentation

professionals:

+ quick overview + (online) references
+ material for making presentations
- rather concise (slightly academic) style

laymen:

+ easy to read overview
- reference to (too) many fields of knowledge

6. Market

As the title indicates, the book is meant as an introduction to multimedia. More specifically, as an introduction to multimedia for first year Computer Science and Information Science students. When setting up the course, I discussed the topics and issues to be dealt with with collegues of the CWI, and we came up with a general description of the course. Then I selected the Principles of Multimedia Database Systems book (discussed in more detail below) and started the course. The course didn't work well. The topics seemed to be too limited, and although the book chosen is of high academic standards, it did not appeal to the students, due partly to the fact that is was too database-oriented. It also appeared that many students did not buy and read the book, but took the exam just by reading my course notes. They were assisted in this, I must admit, by the fact that I formulated a fixed set of questions, and provided backlinks from the questions to the course notes in the online version. For the time they had for it, I do consider that an adequate strategy. Since no other book seemed to meet my demands, I decided to take the existing course notes and extend them with material that I considered relevant and interesting. More in particular, also interesting for students. First year students are easily bored. The themes I organized the book around may be summarized as

- digital convergence
- broadband communication
- multimedia information retrieval

These themes allowed me to pay attention to a variety of subjects, popular trends in digital entertainment, but also standards in development such as MPEG-4, compression and multimedia information retrieval. In other words, I tried to find a balance between interesting material and academically relevant subjects. Although other books may be liked by students, such as for example 'Dust or Magic' or 'Multimedia – Making It Work', I did not consider these books to be acceptable from an academic point of view (although I know the latter is used for a Multimedia course at the University of Amsterdam.)

7. Status

A first version of the manuscript is available at: www.cs.vu.nl/∼eliens/media

It is a complete version, in the sense that all chapters and appendices are written out. The material has been used in the 2002 spring course Introduction Multimedia.

brief history:

I started developing the course notes for the course Introduction Multimedia in the beginning of 2000. I used Principles of Multimedia Databases then as a book. But I was dissatisfied with the course, and decided to develop my own material. After presenting that in class, I decided to write the book, since the idea of it had grown over a period of almost two years.

II. Contents:

The material is divided over 7 chapters, including a preface, afterthoughts and some appendices:

A full contents listing is given in the PDF version of the manuscript:
www.cs.vu.nl/∼eliens/media/doc.pdf

Sample chapters

The full online version can be found on: www.cs.vu.nl/∼eliens/media
The PDF version of the manuscript is available as:
www.cs.vu.nl/∼eliens/media/doc.pdf
A selection of sample chapters (in PDF) is given below.

- preface (PDF)
- chapter 1 (PDF)
- chapter 3 (PDF)

IV. curriculum vitae

A full CV is available at: www.cs.vu.nl/∼eliens/cv/cv.html

previous titles of the author:

- DLP – A language for Distributed Logic Programming, Wiley (1992)

- Principles of Object-Oriented Software Development, Addison-Wesley (2000), 2nd edn.

(research) experience of the author: I have been doing research in multimedia information retrieval and virtual environments (partly as a guest at the dutch research institute CWI), for a period of over four years. This research is reflected in the book, notably chapter 7 and in some of the 'research directions' parts in the other chapters.

courses taught by the author:

- Introduction to Multimedia
- Multimedia Authoring I – Web3D/VRML
- Multimedia Authoring II – Virtual Environments
- Multimedia Casus – Applied Practicum
- in the past: Object Oriented Software Development
- in the past: Formal Methods