ACCESS TO DIGITAL CULTURAL HERITAGE

Innovative Applications of Automated Metadata Generation

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and other contributors

Contributors

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  - Project D002-308 "MetaSpeed: Automated Metadata Generating for e-Documents Specifications and Standards";

- the FP7 Framework programme

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- the Hasselt University

  - Project R-1875 "Search in Art Image Collections Based on Colour Semantics"

  - Project R-1876 "Intelligent systems' memory structuring using multidimensional numbered information spaces"

Two Sentences Overview

The main purpose of this book is to provide an overview of the current trends in the field of digitization of cultural heritage as well as to present recent research done within the framework of the project D002-308 funded by Bulgarian National Science Fund.

The main contributions of the work presented are in organizing digital content, metadata generation, and methods for enhancing resource discovery.

Book Content

- Chapter 1: Digitization of Cultural Heritage – Standards, Institutions, Initiatives

- Chapter 2: REGATTA – Regional Aggregator of Heterogeneous Cultural Artifacts

- Chapter 3: Automated Metadata Extraction from Art Images

- Chapter 4: APICAS – Content-Based Image Retrieval in Art Image Collections Utilizing Colour Semantics

- Chapter 5: Automatic Metadata Generation and Digital Cultural Heritage

1: Digitization of Cultural Heritage – Standards, Institutions, Initiatives

Milena Dobreva, Kalina Sotirova, Juliana Peneva, Stanislav Ivanov, Rositza Doneva

- The main pillars of process of keeping and accessing of cultural heritage in digital space: digitization, access and preservation

- The metadata schemas and standards used in cultural heritage

- The models of contemporary digital libraries

- Some initiatives on world and European level that during the years enforce the process of digitization and organizing digital objects in the cultural heritage domain

- Shifting the focus in the creation of digital resources from "system-centred" to "user-centred".

2: REGATTA – Regional Aggregator of Heterogeneous Cultural Artifacts

Emil Hadzhikolev, Georgi Vragov, George Totkov, Elena Somova

- REGATTA is aimed to present different types of collections, including museum collections, archaeological sites, immovable heritage from Ancient, Mediaeval and National Enlightenment periods in Bulgaria.

- It was designed following the standards of Europeana and characteristics specified in the Bulgarian regulation for creating and managing of museum funds.

- The functional scheme, data model, and technological aspects in REGATTA are discussed.

- The first application of the REGATTA - Plovdiv Ethnographic Museum where artifacts from fund "Crafts" are presented and possibilities to make virtual tours in the museum are shown.

3: Automated Metadata Extraction from Art Images

Krassimira Ivanova, Evgenia Velikova, Peter Stanchev, Iliya Mitov

- Over the past decade, considerable progress has been made to make computers learn to understand, index and annotate pictures representing a wide range of concepts.
- The content-based image retrieval (CBIR) is a technology that helps to organize digital images based on their content.
- Typically, a CBIR system consists of three components:
  - feature design - extracts the visual feature(s) information from the images in the image database
  - indexing - organizes the visual feature information to speed up the query or processing
  - retrieval engine - processes the user query and provides a user interface
- During this process the central issue is to define a proper feature representation and similarity metrics.

Krassimira Ivanova, Peter Stanchev, Koen Vanhoof, Milena Dobreva

- Colour theory from different points of view - physiological, psychological, social

- Proposed colour models during the years

- Classification of harmonies and contrasts in accordance to Ittens' theory from the point of view of three main characteristics of the colour – hue, saturation and luminance

- Formal description of defined harmonies and contrasts

- Program system APICAS ("Art Painting Image Colour Aesthetics and Semantics") as environment for realizing proposed algorithms and for conducting experiments

- A variety of experiments on the use of the system for different tasks (similarity search, user queries, predictive analysis) shows the vividness of proposed features as a step in the transition from Web 2.0 to Web 3.0.

5: Automatic Metadata Generation and Digital Cultural Heritage

Iliya Mitov, Benoit Depaire, Krassimira Ivanova, Koen Vanhoof, Dimitar Blagoev

Some automatic metadata generation methods that can be used in the field of cultural heritage:

- **indirect spatial data extraction by learning restricted finite state automata**: realized in system InDES and tested over extraction of spatial metadata from web sites. Such approach can be used for metadata extraction from objects descriptions and this way to be used in the process of migration from older object representations in the case when the descriptions are in non-structured form

- **association rule mining, which uses the as a storage structures multidimensional numbered information spaces**: realized algorithm ArmSquare in data mining environment system PaGaNe. The possibilities of extracting frequent item-sets can be used for enforcing connections between metadata elements within created ontology

- **associative classifier PGN: also realized in PaGaNe.** It was implemented in the field of analyzing semantic attributes, extracted from art images using CBIR. Within the frame of the data management and the access of the aggregator the classifier PGN can be used for enforcing information discovery

The Connection between Pieces
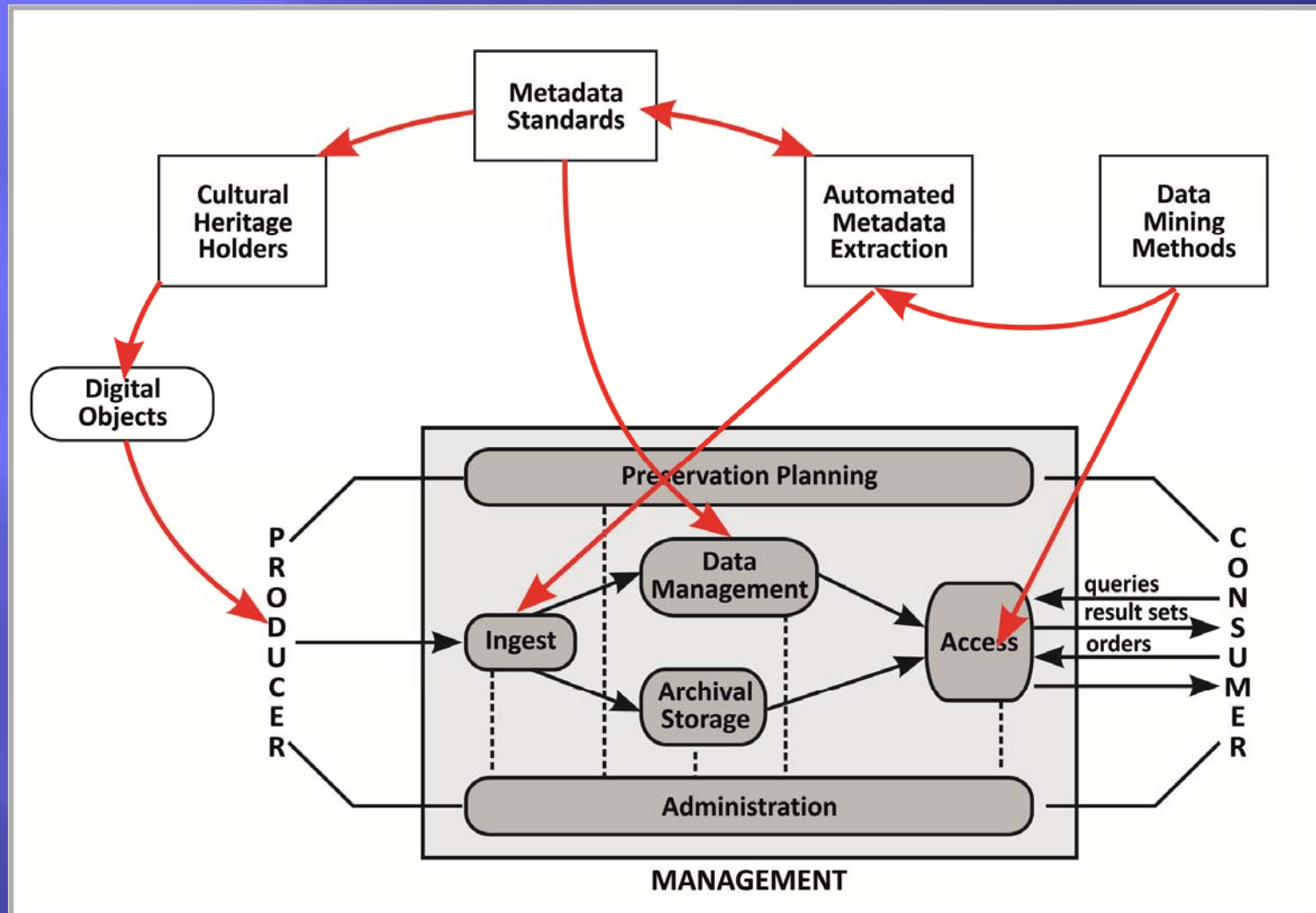
Thank you for your attention !

and

Enjoy the reading in 2012 !