Information Spaces

information spaces

- multimedia information systems
- query mechanisms
- visual interfaces and presentation

from: S.K. Chang and M.F. Costabile – Visual Interfaces to Multimedia Databases The Handbook of Multimedia Information Management

advances in

- storage technology – multimedia databases
- wideband communication – distribution accross networks
- parallel computing – voice, image and video processing
- graphic co-processors – visual information with high image quality

applications multimedia information systems

- geographical information systems
- office automation
- distance learning
- health care
- computer aided design
- scientific visualization
- information visualization

multimedia databases special requirements

- size of data
- synchronization
- query mechanisms
- real time processing

query mechanisms

- relevance feedback
- user-guided navigation

query mechanisms

- free text search
- SQL-like querying
- icon-based techniques
- querying based on ER-diagrams
- content-based querying
- sound-based querying
- query by example
- virtual reality techniques

(multiparadigmatic) visual interface

- visual query language – VQL, VQS
- visual representation and interaction
- icons, diagrams – interaction

design criteria

- seamless combination of query mechanisms
- visual user interface
- visual relevance feedback
- user-guided navigation

information space

In a visual interface for multimedia databases, the information stored in the database needs to be visualized in an information space.

- users conceptualization of the databases
- system generated visualization

logical information space

- represents abstract database objects

physical information space

- materialized as: images, animations, video, voice, ...

information spaces

mimic – virtual reality

or

reflect – diagrams, icons, sketches

information spaces The *logical information space* is a multidimensional space where each point represents an object from the database. unified view of the database

dimensions = attributes

- continuous, numerical, discrete or logical

database object

- or example, is a point in (logical) information space

query

- is an arbitrary region in this information space

clue

- is a region with *directional information*, to facilitate browsing

both examples and queries are clues
the information retrieval problem

to construct the *most desirable* query with respect to the examples and clues presented by the user.

most desirable query is the one that will retrieve the largest number of relevant database objects and whose size in the information space is relatively small *visual reasoning may help the user ...*

information hyperspace

the logical information space may further be structured in a *logical information hyperspace*, where the clues become hyperlinks that provide directional information, and the information space can be navigated by the user following directional clues.

information is chunked, and each chunk is illustrated or made accessible by an example (hypernode) ...

one step further

let's present information in a virtual reality information space (3D)

example

- physical location of medical or student records

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