The MultimediaN E-culture
Search

Semantic Search

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CWI, Semantic Media Interfaces

Semantic Search

- Text-based search queries
- Explicit semantics improve search results

- Many implementations
  - different types of functionality and interfaces
  - What is useful for end-users?

Semantic search survey

- 35 systems
  - Search engine, faceted browser, wiki, question answering, portal
- Analysis of search functionality and interface for
  - Query construction
  - Search algorithm
  - Presentation of search results

http://swuiwiki.webscience.org/index.php/Semantic_Search_Survey
http://en.wikipedia.org/wiki/Semantic_search

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Query Construction

Feature	Functionality	Interface components
Free text input	Keyword, natural language	Single text-entry, Property specific field
Operators	Syntactic disambiguation, Semantic constraints	
Controlled terms	Disambiguate input, Restrict output, Predefined queries	Value lists, Faceted browser, Graph
User feedback	Pre-query disambiguation	Autocompletion

Search algorithm

- Syntactic matching
  - Exact, prefix or substring match
  - Minimal edit distance
  - Stemming
- Semantic matching
  - Graph traversal
  - Query expansion
  - RDFS/OWL reasoning

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Result Presentation

Feature	Functionality	Interface components
Data selection	Selected values, Template, Display vocabularies	Visualized by text, graph, tagcloud, map, timeline, calendar
Ordering	Content / link structure based ranking	Ordered list
Organization	Clustering by property, by result path or dynamic	Tree, nested box structure, clustermap
User feedback	Post-query disambiguation, Recommendation	Facets, tagcloud, value list

Semantic Search

- Point in graph
- Whole graph
- Subset of graph useful for human

- Basic search in eCulture
  - http://e-culture.multimedian.nl
    http://e-culture.multimedian.nl/tutorials/

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Principles of Facet Browsing

- Groups objects from different perspective
- Build constraints as you go

With thanks to Alia Amin for the slides explaining facet browsing

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Group objects from different perspectives

Example: A set of paintings with these properties. How to group them?

- Art Style: Art Nouveau
- Location: Paris
- Artist: Gustav Klimt

- Art Style: Art Nouveau
- Location : Paris
- Artist: Monet

- Art Style: Expressionist
- Location : Vienna
- Artist: Monet

- Art Style: Impressionist
- Location : Paris
- Artist: Picasso

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Groups of objects from different perspectives (location)

Group objects based on location:

- Group 1: Paris
- Group 2: Vienna

Paris

Vienna

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Group objects from different perspectives

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- Location : Paris
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- Art Style: Expressionist
- Location : Vienna
- Artist: Monet

- Art Style: Impressionist
- Location : Paris
- Artist: Picasso

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Groups of objects from different perspectives (art style)

Group objects based on art style:

- Group 1: Art nouveau
- Group 2: Expressionist
- Group 3: Impressionist

Art nouveau

Expressionist

Impressionist

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Group objects from different perspectives

Example: A set of paintings with these properties. How to group them?

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- Art Style: Expressionist
- Location : Vienna
- Artist: Monet

- Art Style: Impressionist
- Location : Paris
- Artist: Picasso

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Groups of objects from different perspectives (artist)

Group objects based on artist:

- Group 1: Gustav Klimt
- Group 2: Picasso
- Group 3: Monet

Gustav Klimt

Picasso

Monet

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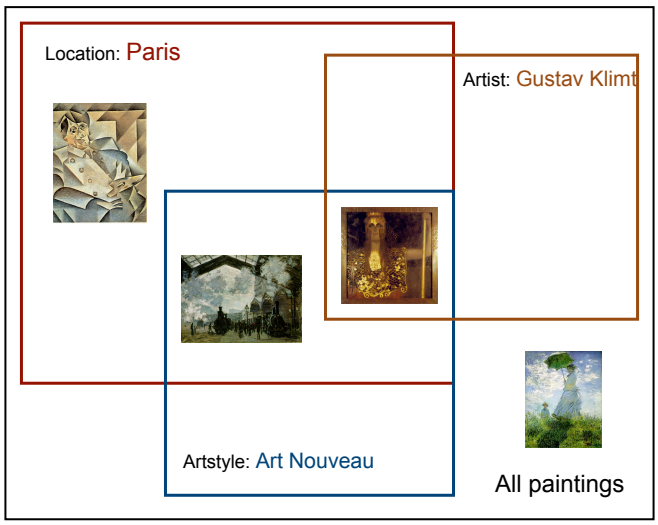
Build constraints as you go

All paintings which are
- Location: Paris
- Artstyle: Art Nouveau
- Artist: Gustav Klimt



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Examples

- Commercial: Ebay Express
- Noncommercial: /facet, Flamenco

- Main advantage: support exploratory search
- Facet browser tutorial at CHI06 and CHI07

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eCulture /facet

Pronounced and googled Slashfacet

demo:
http://e-culture.multimedian.nl/demo/facet

talk:
http://e-culture.multimedian.nl/poster/slashfacet_iswc06/

and video (28 minutes):
http://videolectures.net/iswc06_hildebrand_bhswr/

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Relation Search

- Find relations between two resources
  - What do Vincent van Gogh and Paul Gauguin have in common?
- Naive approach: Search RDF graph
  - search space too large
  - which relations are meaningful?

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Meaningful relations

- Who - person
- What - object
- Where - location
- When - time

- Not explicitly search for relations
- Visualize information in a particular dimension

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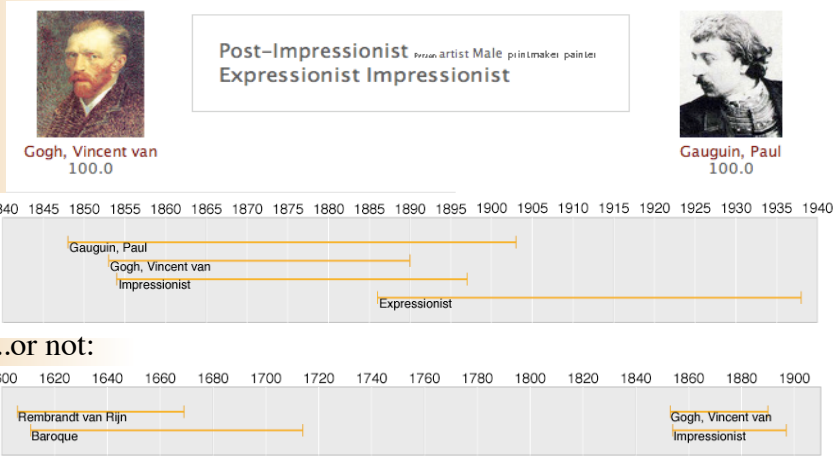
We perceive the relationships...



relation search

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