

Browsing and Understanding a Domain-Specific Ontology: a user study

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Outline

- Overview of the project
- Ontology structure
- Feature of our interface
- Goals of user studies
- Test setting
- Results
- Conclusion and future work

Overview of the project

- Logic and Language Links – [LoLaLi](#)

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- Accessing scientific handbooks by means of a browsable and searchable ontology
- Issues involved:
 - ontology building
 - linking ontology and handbook(s), concept-oriented retrieval
- Case study: *Handbook of Logic and Language* (1997, van Benthem, ter Meulen eds.)

Ontology structure: features

- Concept: anything “relevant” in a domain, provided with a *gloss*
- Directed acyclic graph
 - multiple parenthood
- Hierarchical relations: subclass, part of, instance, mathematical result, computational tool, historical view, unspecified subtopic
- Non-hierarchical relations: related, antonym
- Quasi homonym concepts: individual entries for different senses (e.g. logic 1, logic 2)

Ontology interface: features

- Aim: balance of local and global views, seamless transition from one concept to the other
- Focus + context principle
 - focus: the concept that occupies the center
 - context: one level “up” and “down” (with slight less details)
 - the rest is omitted
- Dynamic: no jumping – coherent experience
- Planarization of the small fragment of the ontology inspected
- Rollover leaves the complexity of the graph virtually untouched

Goals of the user study

- Test usability of the interface
 - browsing and searching
- Test user understanding of the ontology
 - ontology structure
 - typed relations
- Get suggestions about features not yet/partially implemented
 - links to the handbook
 - back button, bookmarks, grouping of concepts

Test: setting

- 14 people: 6 MS, 8 UG
- Questionnaire administered by the two interviewers, 1 hour
 - survey on computer literacy, information gathering strategies
 - tasks and questions (on browsing, searching and “reading”)
 - open questions about preferences
- Little prior instruction from the testers
- Null hypothesis: there are no observable differences across the two groups
- Caveat: language issue

Results

- On computer literacy of the participants
 - comparable experience with PC and the Internet
 - similar information gathering strategies
- On usability
 - browsing OK
 - searching OK
 - rollover on children is well understood
 - but UI fails to make the typed relations sufficiently clear

Results [cont'd]

- On ontology understanding
 - multiple parenthood is not problematic
 - but concepts with more than one parent should be highlighted
 - both MS and UG have understanding of subclass, part of and instance though sometimes intuition is fuzzy or misleading
 - UG have more problems with relations like historical view and notion
- Grouping of concepts is crucial and must be *flexible* and allow for different views

Results [cont'd]

- Links to handbook appreciated, but they should be
 - presented in uniform layout with the rest of the interface (UG)
 - introduced by enough “metadata” (MS)
- Back button and bookmarks do not seem that important

Conclusions

- Visual hints must be improved, in particular for types of relations
- Help and documentation appropriate to the expertise of the user is essential
- Deeper user study only on relations is advisable, in particular for corpus-oriented relations, like *historical view*
- Differences among the two groups in terms of background and *attitude*

Current & Future Work

- Improvements of the UI
- Generation of links from the ontology to the handbook

Logic and Language Links – [LoLaLi](#) Project page

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