

IV. Appendix IV: Experiment 4



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IRB # is IRB00000667.

DATE: January 25, 2007

MEMORANDUM

TO: Edward A. Fox
William Richardson

Approval date: 10/25/2006
Continuing Review Due Date: 10/10/2007
Expiration Date: 10/24/2007

FROM: David M. Moore 

SUBJECT: **IRB Amendment 1 Approval:** "Comparing Summarization Techniques for Electronic Theses About Computing", IRB # 06-615

This memo is regarding the above referenced protocol which was previously granted approval by the IRB on October 25, 2006. You subsequently requested permission to amend your IRB application. Since the requested amendment is nonsubstantive in nature, I, as Chair of the Virginia Tech Institutional Review Board, have granted approval for requested protocol amendment, effective as of January 25, 2007. The anniversary date will remain the same as the original approval date.

As an investigator of human subjects, your responsibilities include the following:

1. Report promptly proposed changes in previously approved human subject research activities to the IRB, including changes to your study forms, procedures and investigators, regardless of how minor. The proposed changes must not be initiated without IRB review and approval, except where necessary to eliminate apparent immediate hazards to the subjects.
2. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.
3. Report promptly to the IRB of the study's closing (i.e., data collecting and data analysis complete at Virginia Tech). If the study is to continue past the expiration date (listed above), investigators must submit a request for continuing review prior to the continuing review due date (listed above). It is the researcher's responsibility to obtain re-approval from the IRB before the study's expiration date.
4. If re-approval is not obtained (unless the study has been reported to the IRB as closed) prior to the expiration date, all activities involving human subjects and data analysis must cease immediately, except where necessary to eliminate apparent immediate hazards to the subjects.

cc: File

Invent the Future

VIRGINIA POLYTECHNIC INSTITUTE UNIVERSITY AND STATE UNIVERSITY
An equal opportunity, affirmative action institution

(scanned copy of IRB approval)

Subject Profile for Summarization Experiment

Participant number:

1. Have you participated in an experiment on information retrieval/information visualization before?

2. How have semesters of experience do you have in any area of computer science?

3. How many semesters have you been an graduate student at Virginia Tech or elsewhere?

4. Have you used concept maps before, either in class or on your own?

5. If so, for how many semesters?

6. How many theses have you read/carefully skimmed in your time here at Virginia Tech?

7. In general, what was your purpose in reading them?

Finding specific information

Discovering open problems

Orienting yourself to a research area

Other:

8. What was the average amount of time you took to read/skim each thesis?

9. If there were a powerful tool which could help you find information in theses, would you consider using it?

Yes

No

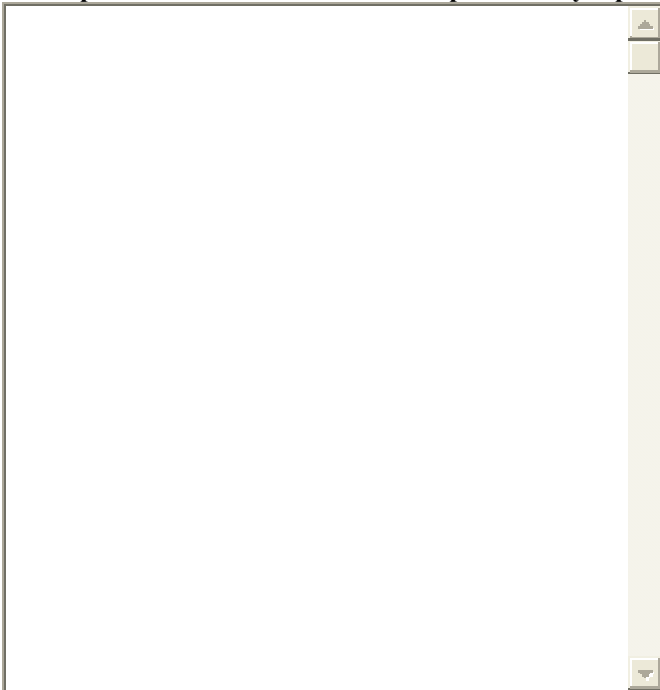
Summarization Questionnaire (one of 6 possible orders)

Please enter your 4-digit user number:

What is the last name of the author of the thesis you just skimmed?

IV.1 Task 1

Please list the 10 to 15 most important concepts in the thesis you just read. List in order from most important to least important. Note that a concept can be expressed as one word, or as a phrase. Please put a semicolon after each concept to clearly separate one from the next.



IV.2 Concept Map Type A

Please examine the concept map in the CMapTools application. The file name consists of the author's last name, followed by '_A'. Once you have examined it, please select the number that best describes your opinion of the statement.

The nodes in the concept map correspond to the most important concepts in the ETD.

Strongly disagree 1 2 3 4 5 Strongly agree

- 1
- 2
- 3
- 4
- 5

The link labels make sense with respect to the nodes they connect in the concept map.

Strongly disagree 1 2 3 4 5 Strongly agree

- 1
- 2

- 3
- 4
- 5

The relationships expressed by the links in the concept map are the most important relationships in the ETD.

Strongly disagree 1 2 3 4 5 Strongly agree

- 1
- 2
- 3
- 4
- 5

Hovering over link text (usually) shows one or more sentences from the original document pertaining to the relation between the concepts.

I found this to be helpful.

Strongly disagree 1 2 3 4 5 Strongly agree

- 1
- 2
- 3
- 4
- 5

The concept map is useful for deciding if you want to read the ETD.

Strongly disagree 1 2 3 4 5 Strongly agree

- 1
- 2
- 3
- 4
- 5

IV.3 Concept Map Type B

Please examine the concept map in the CMapTools application. The file name consists of the author's last name, followed by '_B'. Once you have examined it, please select the number that best describes your opinion of the statement.

The nodes in the concept map correspond to the most important concepts in the ETD.

Strongly disagree 1 2 3 4 5 Strongly agree

- 1
- 2

- 3
- 4
- 5

The link labels make sense with respect to the nodes they connect in the concept map.
Strongly disagree 1 2 3 4 5 Strongly agree

- 1
- 2
- 3
- 4
- 5

The relationships expressed by the links in the concept map are the most important relationships in the ETD.

Strongly disagree 1 2 3 4 5 Strongly agree

- 1
- 2
- 3
- 4
- 5

Hovering over link text (usually) shows one or more sentences from the original document pertaining to the relation between the concepts.

I found this to be helpful.

Strongly disagree 1 2 3 4 5 Strongly agree

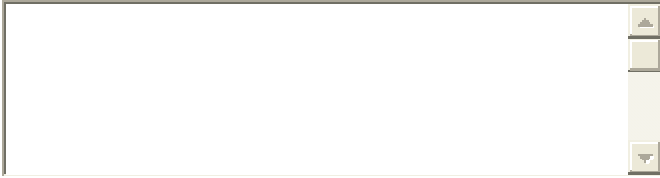
- 1
- 2
- 3
- 4
- 5

The concept map is useful for deciding if you want to read the ETD.

Strongly disagree 1 2 3 4 5 Strongly agree

- 1
- 2
- 3
- 4
- 5

If you have any comments/suggestions on any of the two concept maps that you were just presented with, please enter them here.



Full Results

A = Table of Contents-only map

B = Relex-generated map

C = Table of Contents + Relex map

Users saw either concept map styles A and B, A and C, or B and C for a given dissertation. Then they were presented with a second dissertation, with concept maps made the same way. For instance, if a user saw A and B for the first dissertation, they would see A and B for the second dissertation also.

App. IV. Table 1: Style A (Table of Contents-only map) vs. B (Relex-generated map).

Likert Scores

Concept Map Style A

Nodes	Links	Relations	Hovertext	Overall
2	2	2	1	1
2	2	2	3	2
2	4	1	3	1
1	1	1	1	1
1	1	1	1	1
1	1	1	2	2
2	2	2	2	2
2	3	2	1	2
3	1	2	1	2
4	5	2	5	5
3	4	3	5	5
1	5	1	4	3
2	2	1	2	1
4	4	3	5	5
2	4	2	2	3
1	2	1	1	1
4	4	3	5	5
3	3	3	4	4
3	3	4	5	5
3	3	2	4	4
2	3	3	3	4

Means: 2.29 2.81 2.00 2.86 2.81

Likert Scores

Concept Map Style B

Nodes	Links	Relations	Hovertext	Overall
4	4	4	2	4
3	4	3	3	3
4	3	3	3	4
3	4	3	5	3
3	2	2	4	2
4	4	3	4	5
4	3	4	4	4
2	2	1	2	2
2	1	3	5	1
4	4	4	3	5

4	5	4	3	5
2	4	2	4	3
5	4	4	5	5
1	1	1	2	3
3	4	2	4	2
4	5	4	5	5
1	1	1	2	3
4	4	3	5	4
4	3	3	5	3
3	3	3	4	4
3	3	3	4	4

3.19 3.24 **2.86** **3.71** 3.52

p-values **0.011** 0.137 **0.007** 0.041 **0.050**

App. IV. Table 2: Style A (Table of Contents-only map) vs. C (Table of Contents + Relex map) case.

Likert Scores

Concept Map Style A

Nodes	Links	Relations	Hovertext	Overall
5	4	4	3	4
5	4	4	4	5
2	4	2	4	3
4	5	4	3	4
2	4	2	4	2
3	4	4	3	4
3	4	3	2	3
3	4	3	3	2
1	5	1	1	2
2	3	2	1	1
1	3	4	3	2
2	2	2	1	2
1	5	1	2	2
2	3	1	3	1
4	4	3	3	2
4	4	2	4	4
1	2	1	1	4
2	2	3	2	1
4	4	4	5	4
1	2	1	2	1
4	5	2	5	4
5	4	4	3	4
5	4	4	4	4
2	4	2	4	4

Means: **2.833333** 3.708333 **2.625** 2.916667 **2.875**

Likert
Scores

Concept Map Style C

Nodes	Links	Relations	Hovertext	Overall
5	5	5	3	5
5	4	5	4	5
3	4	4	5	5
5	5	4	2	4
4	5	5	4	5
4	4	4	3	5
4	4	4	2	4
3	4	4	4	4
3	2	2	2	2
2	3	2	1	1
3	4	3	4	2
2	2	3	1	4
4	3	4	4	5
2	3	1	3	1
4	4	3	2	3
3	2	4	2	4
2	4	2	1	4
2	2	3	3	2
5	4	2	4	4
2	1	2	2	2
4	3	4	5	5
5	4	4	3	4
5	3	3	3	4
3	3	2	4	4

3.5 3.416667 **3.291667** 2.958333 **3.666667**

p-values: **0.000828** 0.107796 **0.006205** 0.407101 **0.000304**

App. IV. Table 3: Style B (Relex-only map) vs. C (Table of Contents + Relex map) case.

Likert Scores

Concept Map Style B

Nodes	Links	Relations	Hovertext	Overall
1	2	1	3	1
4	4	4	5	5
4	2	3	1	4
2	2	1	4	2
4	2	4	3	4
4	4	3	4	2
3	1	5	5	3
3	5	4	4	4
4	4	4	3	4
3	3	4	2	4
4	3	3	4	5
4	3	4	5	2
3	2	3	4	3
2	3	4	3	4
5		3	5	5
5	4	5	5	5
4	4	3	4	1
4	3	4	4	3
4	4	4	4	3
4	1	2	4	3
2	2	3	2	3
4	4	3	4	4
5	4	5	4	5
1	2	2	3	5
4	3	3	1	3
3	2	3	2	3

Means: 3.46 2.92 3.35 **3.54** 3.46

p-values: 0.077 0.052 0.354 **0.015** 0.453

Likert Scores

Concept Map Style C

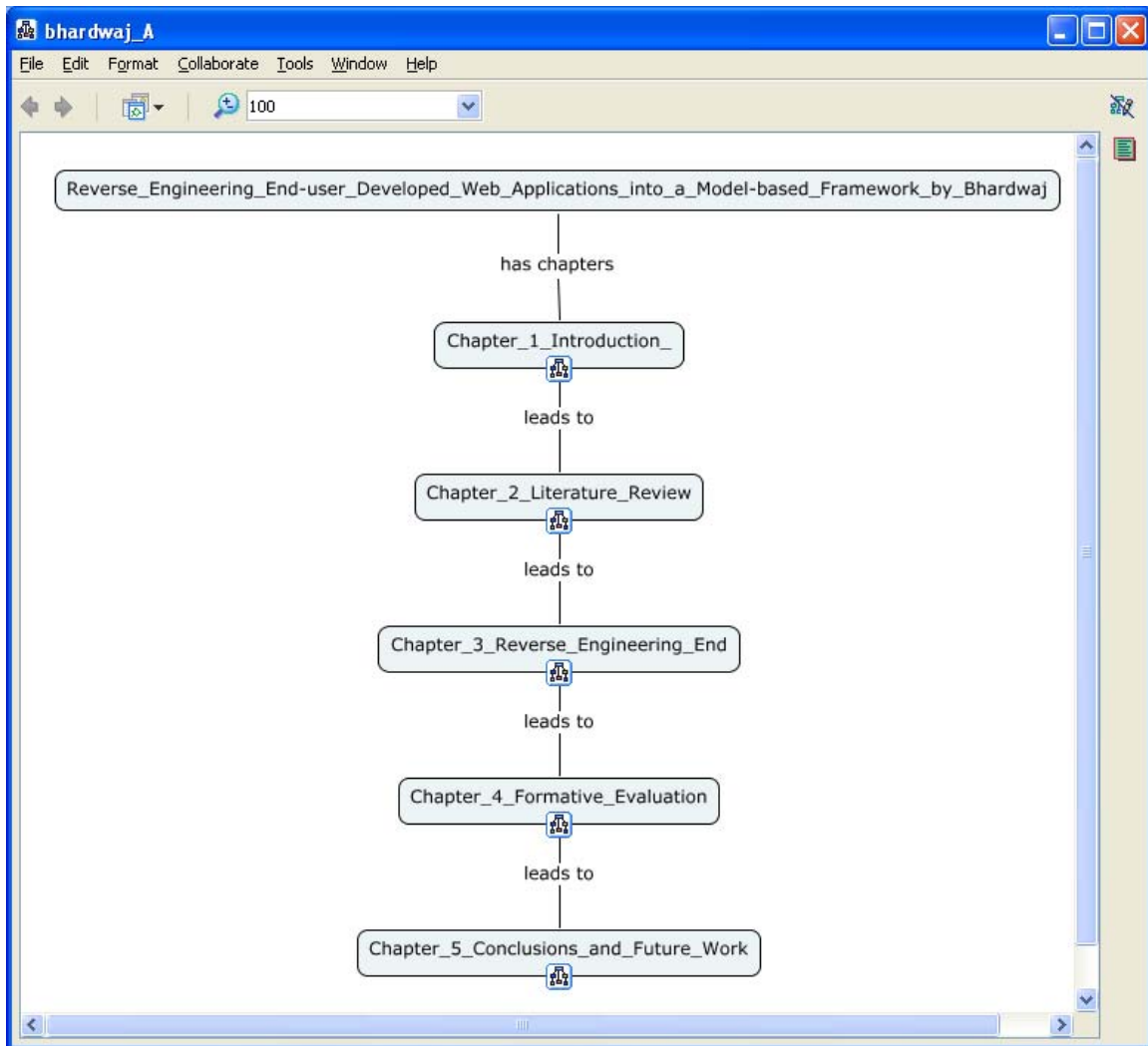
Nodes	Links	Relations	Hovertext	Overall
	4	5	4	5
1	1	2	2	1
4	4	5	1	4

3	4	2	4	4
4	5	3	4	5
4	3	4	5	4
5	5	3	4	3
1	1	3	2	2
4	3	4	3	4
4	4	4	2	3
4	5	3	4	5
4	4	4	3	4
2	4	3	3	4
3	4	4	3	5
5	4	5	5	5
5	5	5	5	5
4	4	3	4	2
4	3	3	2	3
3	4	3	4	3
2	4	5	2	3
2	2	1	1	2
4	4	3	4	4
5	4	4	4	4
1	5	1	3	3
1	2	1	1	1
1	1	1	1	1

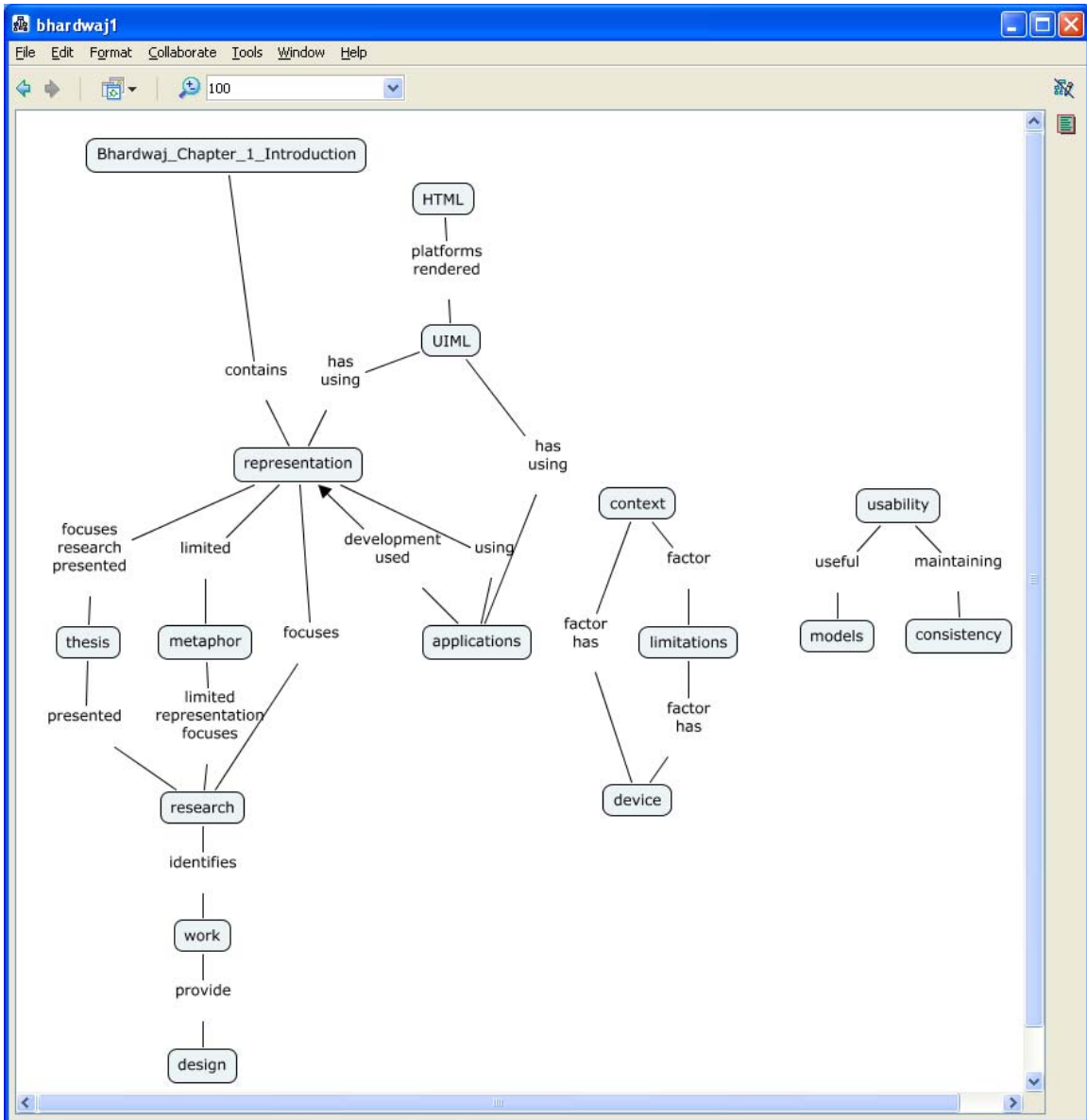
3.20 3.58 3.23 **3.08** 3.42

p-values: 0.077 0.052 0.354 **0.015** 0.453

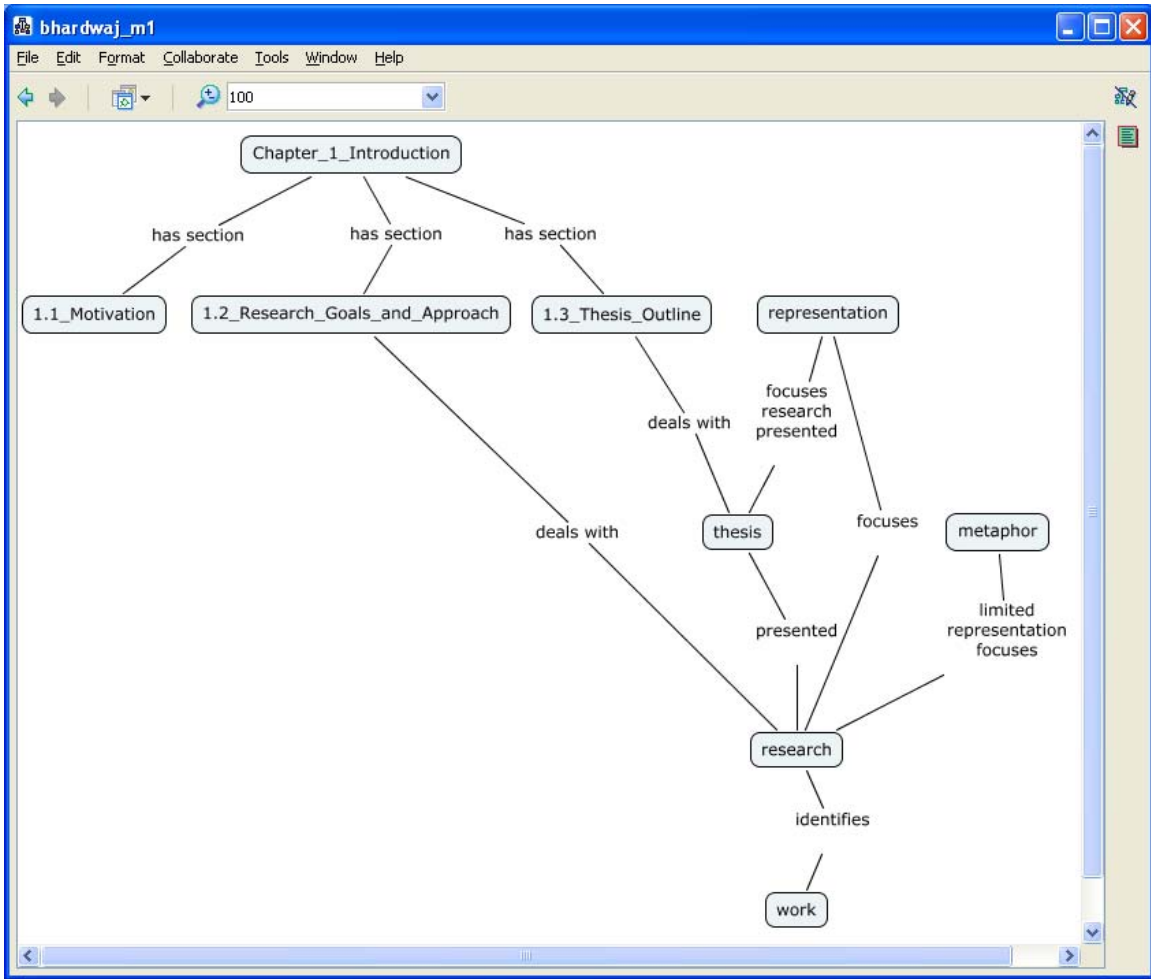
Some concept maps used in the experiment.



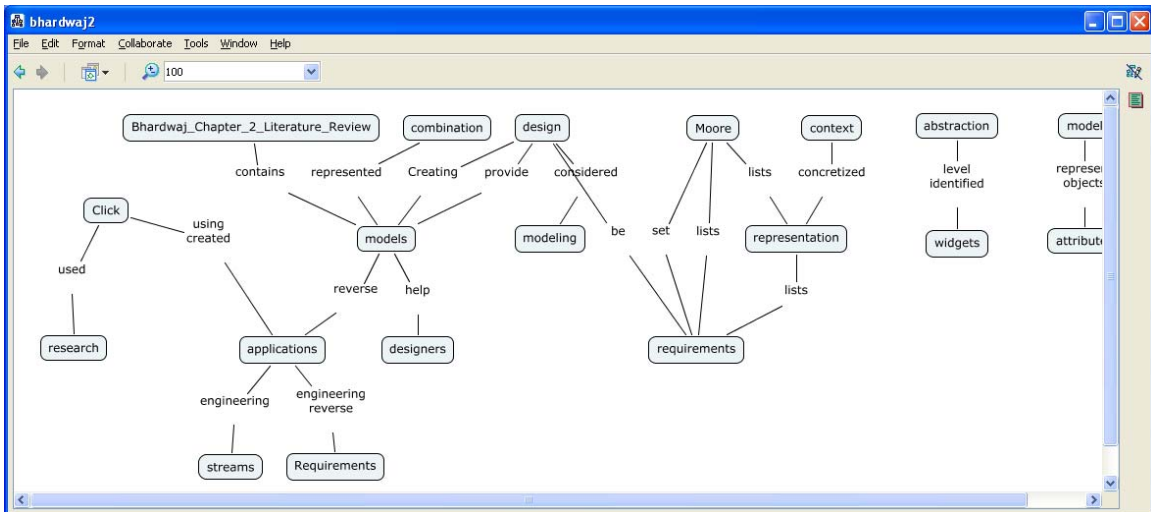
App. IV. Figure 1: Top level map for Bhardwaj.



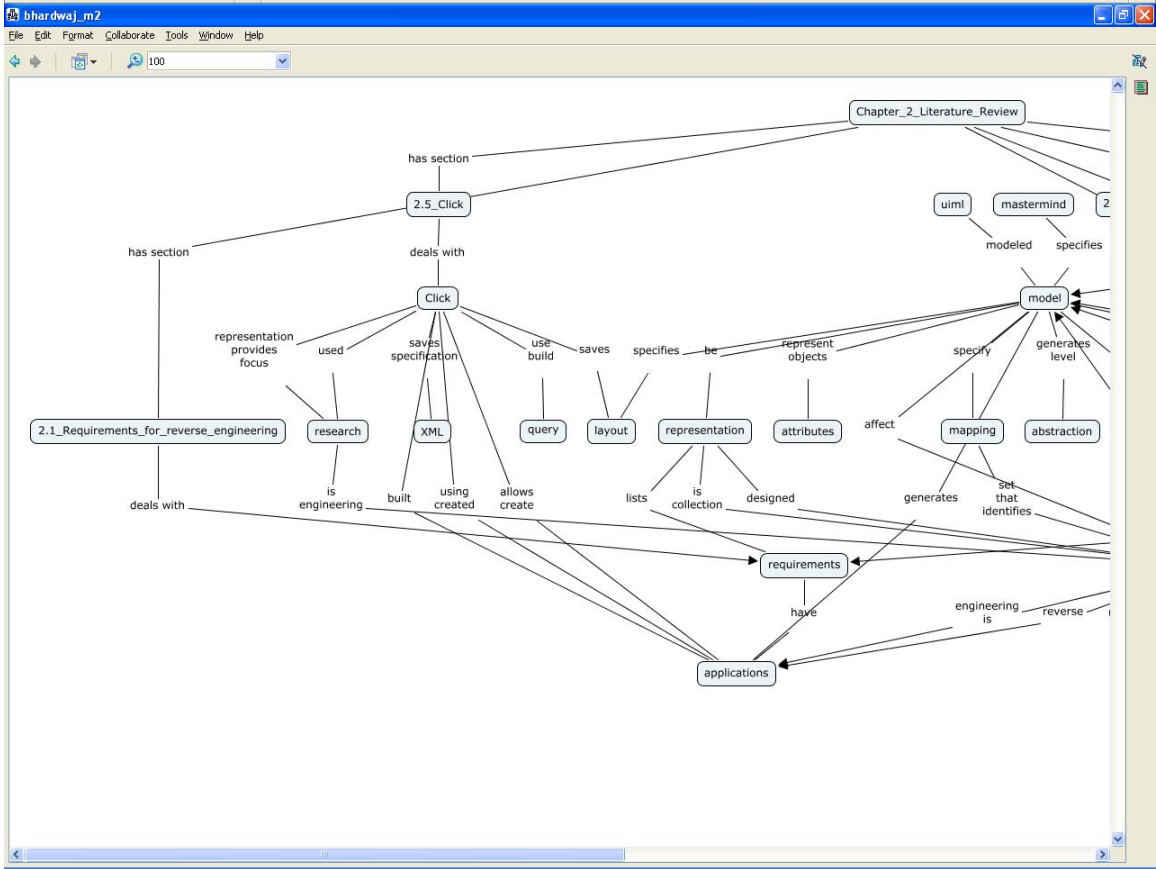
App. IV. Figure 2: Bhardwaj Chapter 1 (Relex-only terms).



App. IV. Figure 3: Bhardwaj Chapter 2 (Table of Contents plus Relex Terms).



App. IV. Figure 4: Bhardwaj Chapter 2 (Relex-only).



App. IV. Figure 5: Bhardwaj Chapter 2 (Table of Contents plus Relx).