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Comparative study of Search Engine Result Visualization: Ranked Lists Versus Graphs

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1. Motivation

• Locating information in general interest domain with no specific knowledge is not well supported by modern WWW IR systems [1].

• Search refinement by selectively following hyperlinks part of user coping strategies [2] to alleviate this predicament.

2. Objective: Show the inherent connectivity Current:

Search engine results (SER) (e.g. Google or Yahoo) does not show any connectivity between these results.

Our proposal:

Showing the user an SER graph could:

- 1. Improve retrieval effectiveness
- 2. Decrease time spent looking at documents.
- 3. SOMETHING INTELLIGENT ABOUT THE CLICK ORDER

3. Interfaces

- Data: Clueweb09 Subset B. No spam filtering.
- Queries: 200 TREC queries and relevance assessments. No user-submissions.

4. User Study

• "Assess how many of the documents shown in these interfaces are, in your opinion, relevant to the query"

• 10 users, 30 minute session.

5. Results

	Retrieval effectiveness per interface					
List			Graph			
MAP @ 20	MRR	R @ 20	MAP @ 20	MRR	R @ 20	
0.4195	0.4698	0.0067	0.3211	0.3948	0.0069	

	Ti	ime spent on interface (sec)					
List Graph							
MIN	MAX	MEAN	STD	MIN	MAX	MEAN	STD
1.39	25.78	8.23	4.37	3.32	20.96	9.70	3.70

- Snippet: Showing highest-scoring snippet.
- Visualisation: Top-20 retrieved docs (Indri 5.2) and links between these.





	Mean rater agreement				
Inter-participant		Inter-rater			
List	Graph	List	Graph		
0.198	0.044	-0.075	-0.072		

5. Finding

Ranked lists results in faster and more precise search sessions than graph-based SER visualisations.

gmat prep classes	Search	I dont get it	Done		
Rank: 1, Docu	imentname: dueweb09-ei	10008-63-43170			
Rank: 2, Docu	imentname: dueweb09-ei	0004-20-00083			
Rank: 3, Docu	imentname: dueweb09-ei	0008-29-41864			
Rank: 4, Docu	imentname: dueweb09-ei	0008-29-41863			
Rank: 5, Docu	imentname: dueweb09-ei	0011-04-13994			
Rank: 6, Docu	imentname: dueweb09-ei	0008-63-43169			
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#### **Future work**

Address limitations (population size, HTML extraction, connectivity sparsity, relevance to pre-typed queries)
Scale up to large displays

#### References:

[1] G. Marchionini. Exploratory search: from finding to understanding. Communication of the ACM, 49(4):41 – 46, 2006.
 [2] R.W. White, G. Murasen, G. Marchionini. Workshop on evaluating exploratory search systems. SIGIR Forum, 40(2):52 – 60, 2006.

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