

Exploiting User Context and Preferences for Intelligent Web Search

Ana G. Maguitman - Carlos I. Chesñevar
Carlos M. Lorenzetti - Fernando M. Sagui
Guillermo R. Simari



Laboratorio de Investigación y Desarrollo en Inteligencia Artificial
Departamento de Ciencias e Ingeniería de la Computación
Universidad Nacional del Sur



Web Search Engines: Limitations

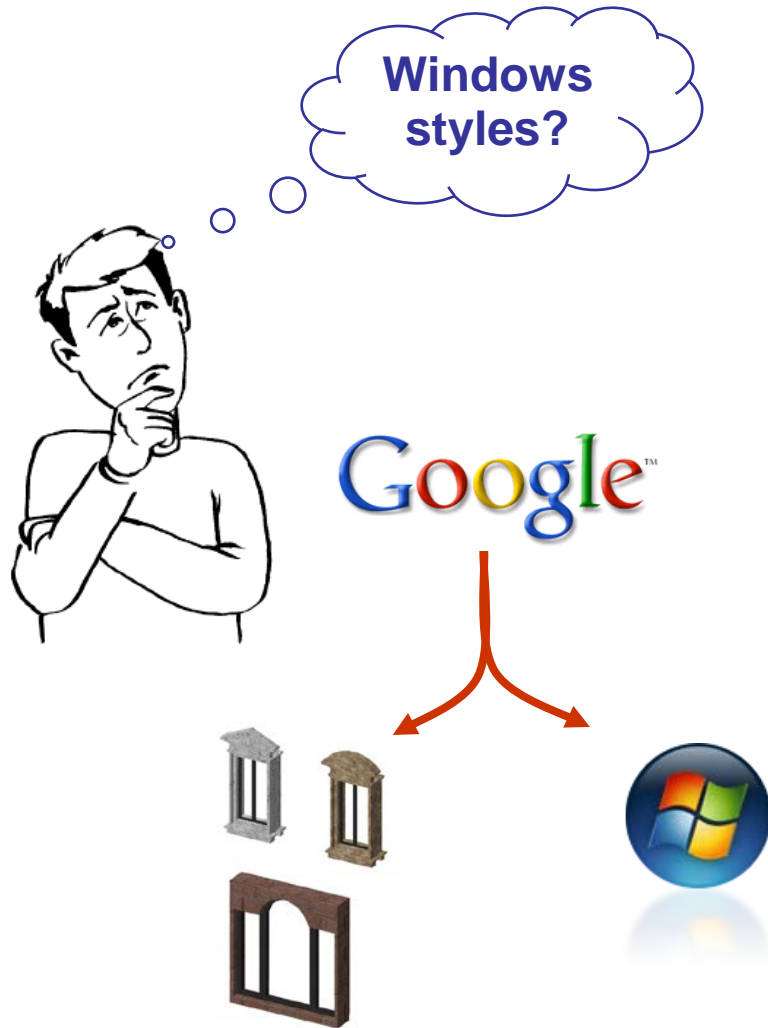


Web Search Engines address the problem of information overload by providing search results.

Limitations

- Unable to perform **qualitative inference** on user queries.
- Unable to deal with the **defeasible nature of user's preferences**.
- Unable to provide **explanations**: trustworthiness issues!

Web Search Engines: Limitations



How to find out about any topic of special interest?

Exploiting contextual information to automatically retrieve resources relevant to the user's task.

Existing search engines can't reflect rich contexts:

- Length limits on queries may preclude including sufficient contextual information
- Variation in vocabularies may hinder successful retrieval

(1) Context-Specific Terms

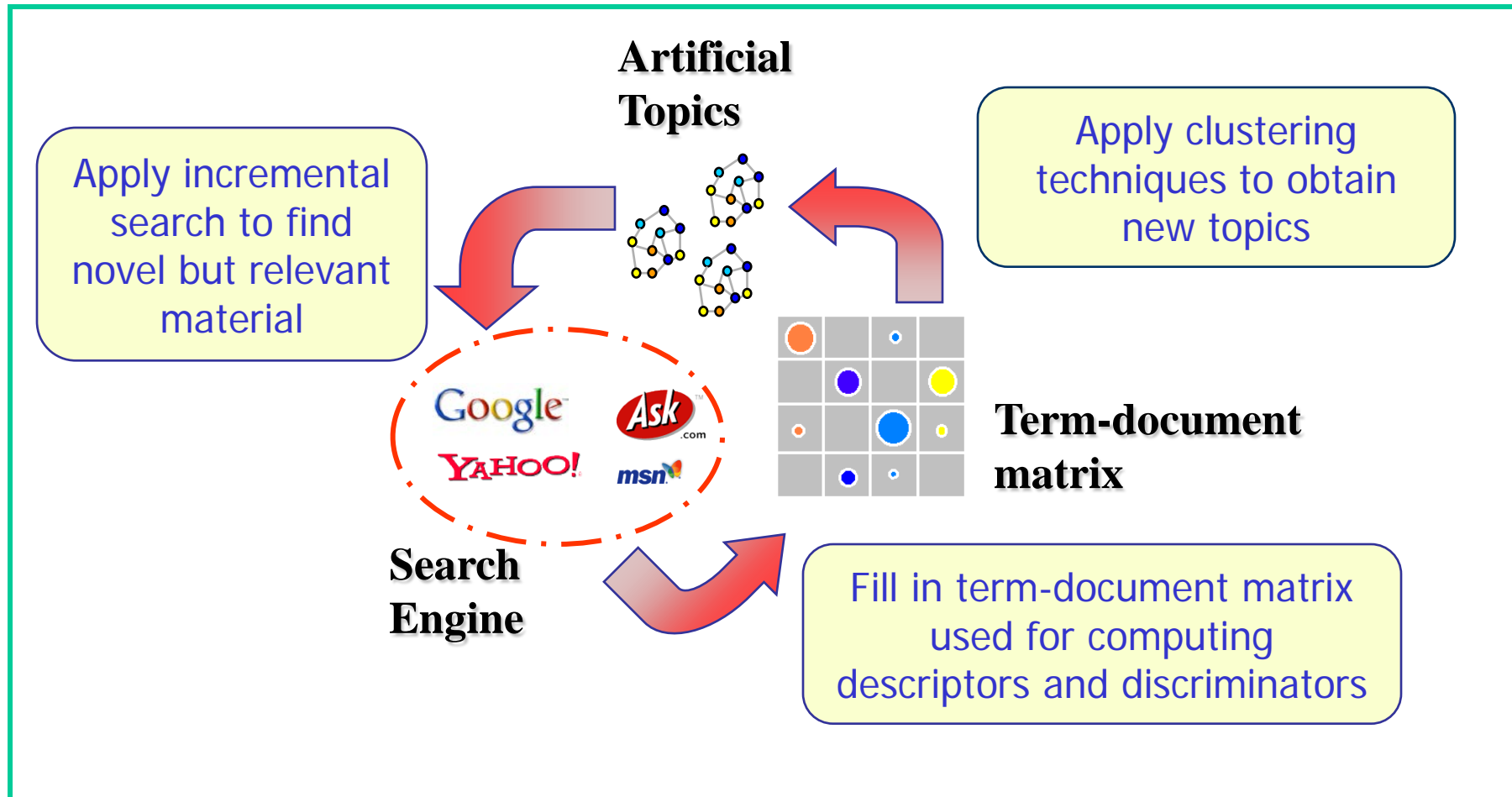
Descriptors: Terms that occur *often* in the topic.

- Good topic descriptors are those terms that answer to the question: “*What is this topic about?*” (**Recall**)

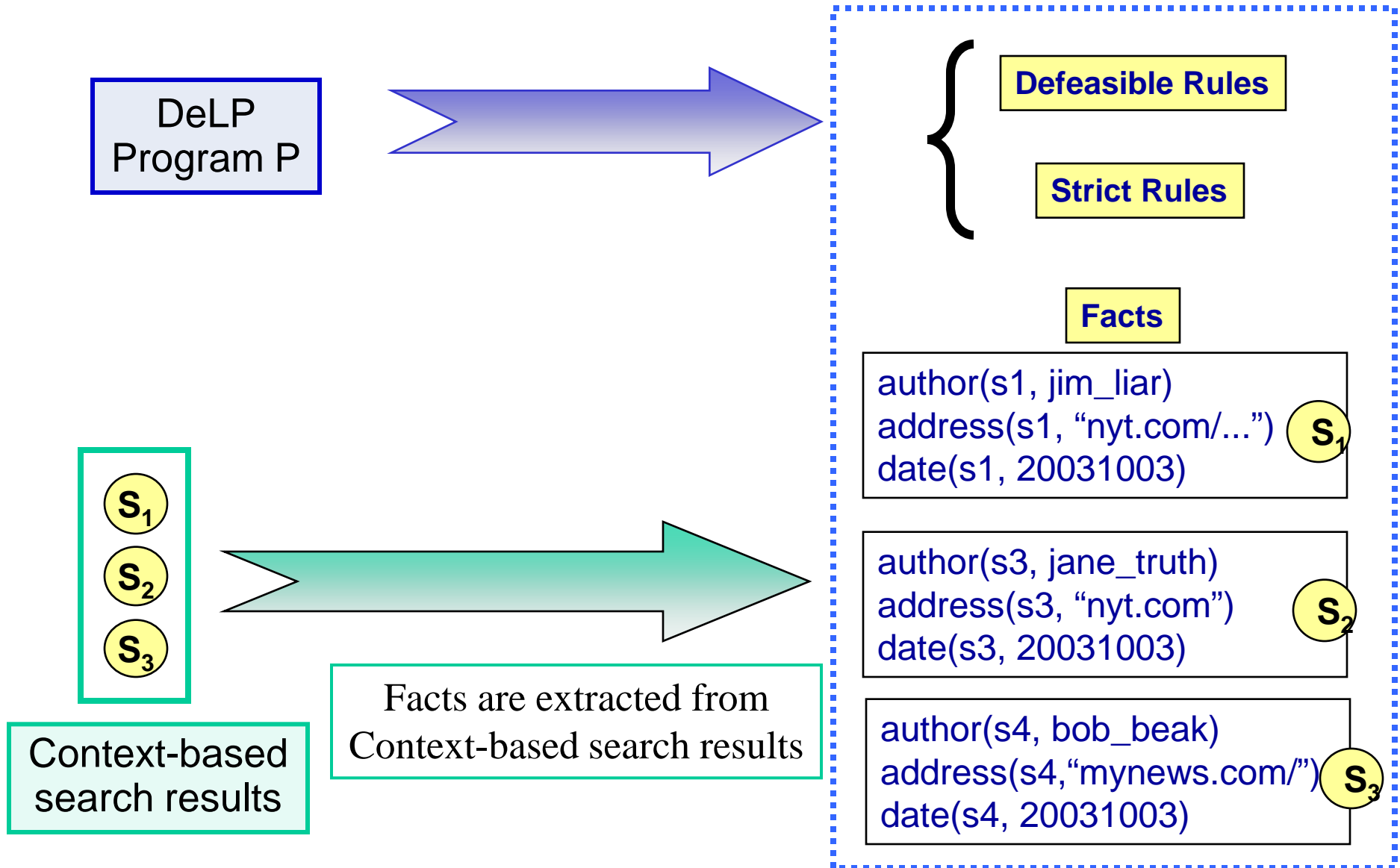
Discriminators: Terms that occur *only* in the topic.

- Good topic discriminators are those terms that answer to the question: “*What are the best terms to build a query?*” (**Precision**)

(2) Context-based search system

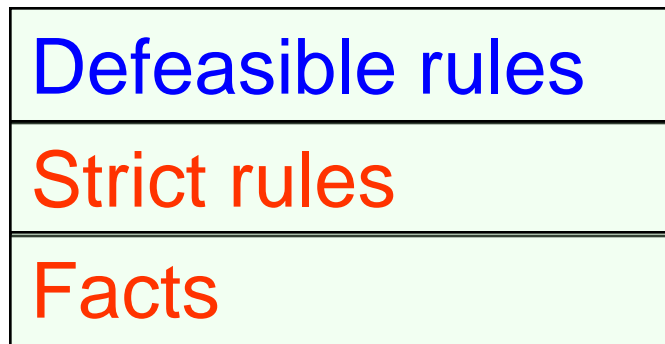


(3) Extended DeLP Program

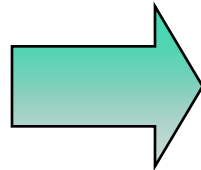


(4) DeLP Interpreter

DeLP Program P



DeLP
Interpreter



Abstract
Machine



User Query

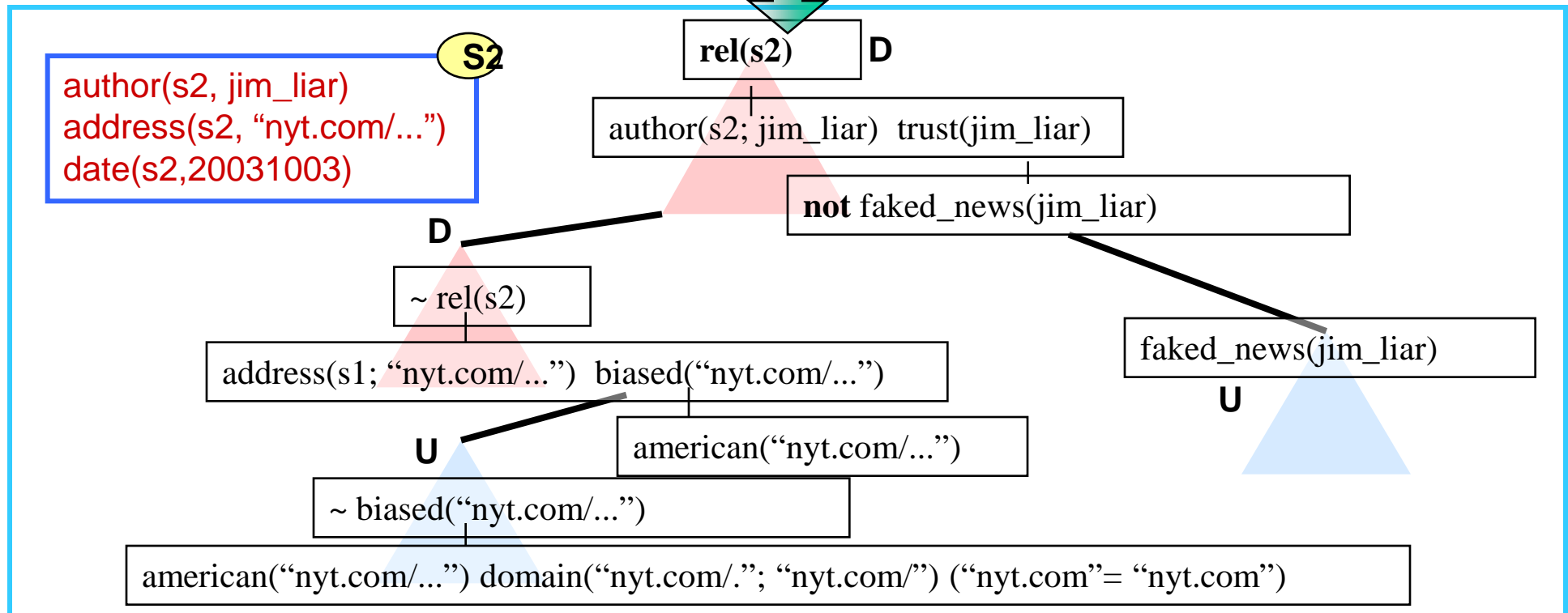
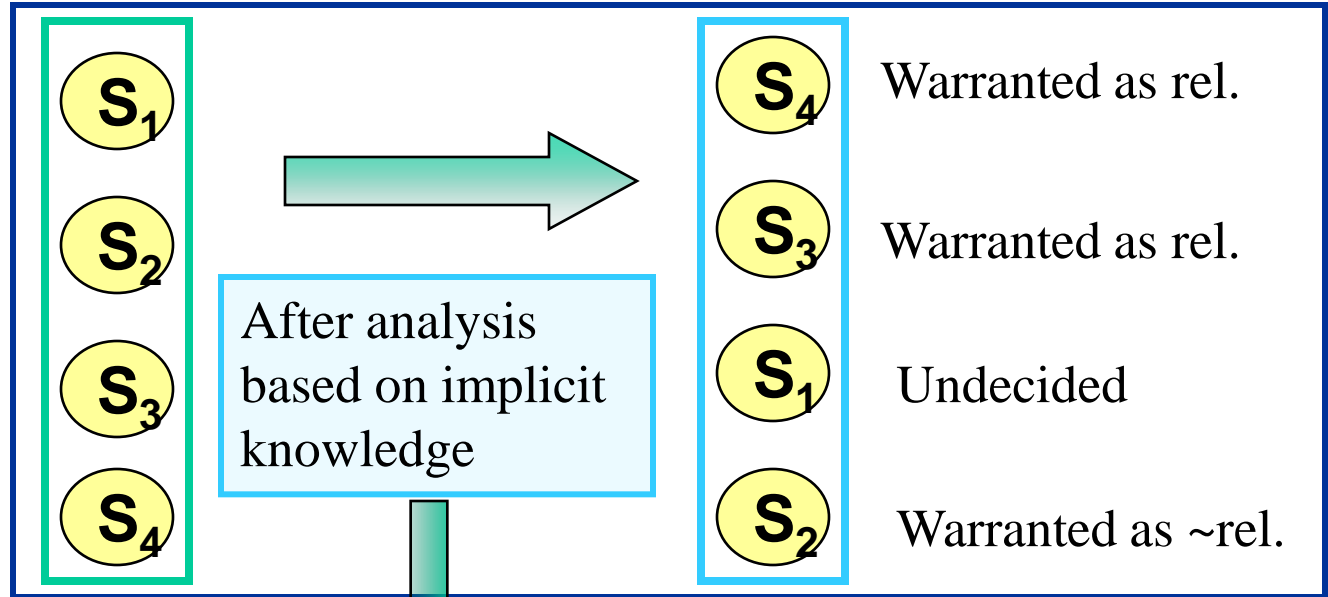
?- relevant(search_result)



Possible Answers to Query h

- **YES** (there exists a warranted argument $\langle A, h \rangle$)
- **NO** (there exists a warranted argument for $\langle A, \sim h \rangle$)
- **UNDECIDED** (none of the above cases hold).

(5) Prioritizing search results



Conclusions

- This work has described ongoing research on **exploiting the information in the user context** to refine Web search queries.
- In addition it proposes a novel approach for enhancing Web search technologies through the use of **qualitative, argument-based analysis**.
- We have used **DeLP** for carrying on that analysis.
- Current research trends show that the combination of **quantitative** and **qualitative** analysis of the **user context** and **preferences** will play a major role in Web search technology.