Squiggle Med: Semantic Search for Medical Digital Library

Workshop for W3C Semantic Web
Health Care & Life Sciences Interest Group

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Squiggle: real-world semantic search engines

- At CEFRIEL, with Semantic Web technologies, we built a search engine called Squiggle and we tested it in different contexts.

http://squiggle.cefriel.it/

- Squiggle is not a search engine itself, but it is a framework to support the building of domain-aware search engines.

- Squiggle adopts SKOS as application ontology and allows for an easy customization with domain knowledge ontologies and metadata.
Real-world semantic search engines

Squiggle Med

Squiggle Med (medical literature domain)

- uses PubMed (see http://pubmed.com) as content source
- leverages on a multilingual medical ontology,
  - built starting from the terminology of a shared and well-known thesaurus like MeSH (Medical Subject Headings, for details see http://www.nlm.nih.gov/mesh/)
  - merging different translations of MeSH terms
- lets the user
  - submit queries in his own language, leaving to the engine the effort of “recognizing” the meaning of the query
  - find relevant medical literature from PubMed that are semantically indexed with regards to the medical ontology
  - in case, expand his/her query to related concepts

- Coming soon at http://squiggle.cefriel.it/
Real-world semantic search engines
Example without Squiggle Med

“Diagnosi preventiva del cancro al seno”

No match found !!

traditional syntactic search engine vs. ...

Syntactic search engine

...early detection...
...breast cancer...

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Real-world semantic search engines
Example with Squiggle Med

“Diagnosi preventiva del cancro al seno”

Good match found!!

... vs. semantic search engine

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Real-world semantic search engines

Squiggle Med at work

Diagnosi preventiva del cancro al seno

Underwood SM.
African American women: nursing essentials.

Jansen N, Nickers P, Deneufbourg JM.

Paajanen H, Kyhala L, Varjo R, Rantala S.

Screening mammography: do women prefer a higher recall rate given the possibility of cancer?
Radiology. 2006 Mar;238(3):793-800.

Sener SF, Winchester DJ, Winchester DP, Barrera E, Bilimoria M, Brinkmann E, Alwawi E, Rabbitt S, Schermerhorn M, Du H.
Survival rates for breast cancers detected in a community service screening mammogram program.

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On-line demos of Squiggle

🎵 Squiggle Music (music context)
- http://squiggle.cefriel.it/music

❄ Squiggle Ski (Olympic Winter Games disciplines)
- http://squiggle.cefriel.it/ski

Try them out!
Thank you for your attention

Any questions?

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