Khresmoi – Multilingual Semantic Search of Medical Text and Images

Henning Müller
Allan Hanbury
Khresmoi

- 4 year EU Project
- Currently in its 3rd year
Quick Poll

- Who has searched for health information online?
- Where do you search?
  - Websites suggested by a health care provider
  - Forums and Blogs
  - Websites providing health information (hospital, university, …)
  - Wikipedia
  - Facebook
  - General search engines (Google, Yahoo, Bing)
How often do you use the following types of online sources to find online health information?

- Search engines (Google, Yahoo, MSN, etc.)
- Web sites providing health information (Hospital, University, Pharma, Publishers)
- Wikipedia
- Specialized search tool (HONselect, Medline Plus etc.)
- Links from a health web site
- Web sites suggested by a health care provider
- Forums and blogs
- Portal web sites (Yahoo health, Google Health, MSN Health, etc.)
- Web sites suggested by a friend
- Facebook or other social networks
The Khresmoi System

- HONcode certified websites
- Crawler
- Solr / Lucene
- AJAX User Interface
- Spell Checker
- MOSES
- Knowledge base
Quick Poll

• Where do you believe that physicians search for medical information?
• Hospital or University websites
• Wikipedia
• Physician network communities
• Medical research databases (e.g. PubMed)
• General search engines (Google, Yahoo, Bing)
Figure 4.1 Frequency of use of online resources*

*Question asked: "How often do you use the following types of online resources to find online medical information?"
The Khresmoi System

- Journals with images
- ezDL Web Interface
- ezDL Desktop Interface
- ezDL Mobile Interface
- ezDL Backend
- SCA Integration Framework
- ParaDISE Index
- GATE
- Mimir Indexes
- Knowledge base
- GATE Teamware
- Disambiguator
- Spell Checker
- Solr / Lucene
- AJAX User Interface
- MOSES
- HONcode certified websites
- Crawler
- Physician websites
- GATE
- SCA Integration Framework
- Spell Checker
- MOSES
Searching Index "khresmo"

Documents 1 to 20 of 39217:

133876.xml_502E8
: Tablet: Efavirenz 600 mg, emtricitabine 200 mg, emtricitabine 200 mg, and tenofovir 600 mg, and tenofovir disoproxil fumarate 300 mg. Comivir ... ...

1240.xml_2884E
mL teaspoon) Aluminum hydroxide 500 mg Magnesium hydroxide 500 mL teaspoon) Calcium carbonate 400 mg Magnesium hydroxide 135 mg Mylanta Regular Strength ... ...

A Two-Part 26-Week Study of Etoricoxib as Treatment for Ankylosing Spondylitis (AS) (MK-0683-108) · Full Text View · ClinicalTrials.gov of treatment with etoricoxib 90 mg or 60 mg of treatment with etoricoxib 90 mg compared with etoricoxib mg compared with etoricoxib 60 mg Condition Intervention ... ...

ZETIA (EZETIMIBE) TABLET [MSP DISTRIBUTION SERVICES (C) LLC]
ever assigned to ezetimibe 10 mg plus simvastatin 20 10 mg plus simvastatin 20 mg (n= 8% Statins Lovastatin 20 mg CD, 7 ... ...

Standard Medical Management in Secondary Prevention of Ischemic Stroke in China · Full Text View · ClinicalTrials.gov/day or Clopidogrel 75mg/day) , statins(Atorvastatin 20mg/day or /day or Simvastatin 20mg/day) ... ...

38646.xml_2GECF
Photos of Gabapentin Gabapentin 100 mg Cap IVA, IVA, white Gabapentin 100 mg Cap IVA, IVA, white Gabapentin 100 mg APO, white ... ...

A Safety and Efficacy Trial of Aliskiren 150mg, 300 mg Compared to Ramipril 5mg, 10mg in the Elderly · Full Text View · ClinicalTrials.gov Efficacy Trial of Aliskiren 150mg, 300 mg Compared to Ramipril 5mg, 10mg Efficacy Trial of Aliskiren 150mg, 300 mg ... ...

Treatment of Acute Migraine Headaches
in adults. Acetaminophen 400 mg in combination with mg, and acetaminophen 500 mg plus metoclopramide 5 500 mg plus metoclopramide 5mg has been shown ... ...
Medical imaging data production

- Medical imaging is estimated to occupy **30%** of world storage capacity in 2010!

- Mammography data in the US in 2009 amounts to **2.5 Petabytes**

Riding the wave – how Europe can gain from the rising tide of scientific data, report of the European Commission, 10/2010.
The Khresmoi System

- Journals with images
- 3D images on the PACS
- Radiology reports on the PACS
- HONcode certified websites
- Crawler
- Physician websites
- ezDL Web Interface
- ezDL Desktop Interface
- ezDL Mobile Interface
- ezDL Backend
- SCA Integration Framework
- ParaDISE
  - Index
- 3D image analyser and indexer
  - Index
- GATE
- GATE Teamware
- Mimir
  - Indexes
- Knowledge base
- Disambiguator
- Spell Checker
- MOSES
- Solr / Lucene
- AJAX User Interface
- Knowledge base
- Spell Checker
- MOSES

MOSES
Open Source Components

- **GATE** ([https://gate.ac.uk](https://gate.ac.uk))
  - General Architecture for Text Engineering
  - Used to annotate documents at word, section and document levels.
- **Mimir** ([https://gate.ac.uk/mimir](https://gate.ac.uk/mimir))
  - Uses GATE annotations to perform semantic search.
- **ezDL** ([http://ezdl.de](http://ezdl.de))
  - Framework for interactive search applications.
- **ParaDISE**
  - New visual search engine using state-of-the-art image features and visual similarity calculation.
- **MOSES** ([http://www.statmt.org/moses](http://www.statmt.org/moses))
  - Statistical machine translation software.
  - Trained to translate text in the medical domain.
Khresmoi Consortium

http://khresmoi.eu
• http://khresmoi.eu
• @khresmoi
• Khresmoi LinkedIn Group