Khresmoi – Towards improved medical information access

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Health information search today

- Knowledge is produced increasingly quickly
  - Medical literature has an explosion in publications
  - Not all clinicians have access to new information with the same speed

- Clinicians search for information frequently
  - Physicians have an unmet information need for 2 of every 3 patients seen
  - PubMed search takes long (30+ minutes instead of 5 available)
  - Imaging and other exams create information overload

- We want empowered patients but no Cyberchondria
  - But can they access information of high quality?
The Google problem

P. López-Jornet, F. Camacho-Alonso, The quality of Internet sites providing information relating to oral cancer, Oral Oncology, 2009.
Growth ...

Number of Images Captured per Day

[9]
Khresmoi aims to build

- A multi-lingual, multi-modal search and access system for biomedical information and documents
  - Data from many sources
  - Multi-dimensional medical images (2D, 3D, 4D)
  - Improved search capabilities through natural language processing, information extraction, supervised and unsupervised categorization, linking text to knowledge base facts, …
  - Trustable results at a level of understanding adapted to the users
Use Cases

Use Case 1:
Medical Information for European Citizens and Medical Professionals

Use Case 2:
Medical Information for Radiologists
Use Case: Medical Information Search

- Information should be:
  - Easy to find
  - In the language of the user
  - At the level required by the user
  - Trustworthy and reliable

- End users:
  - Health on the Net
  - Society of Physicians in Vienna
Large-scale questionnaires and interviews are conducted with medical professionals and the general population.
Survey Results

- See the results of the survey of the general public here:
Use Case: Radiology

- Overcome the **flood of images** and their complexity
- (Semi) automatic analysis of radiological images (CT, MRI, fMRI, ...)
- Link images to literature and past cases (anonymised)

**End users:**
- Vienna Medical University
- University Hospitals of Geneva
Survey Results

• See the results of the survey of the radiologists here:
Open Source Components

- GATE – information extraction
- Mimir – search
- ezDL – user interfaces
- GIFT – visual retrieval
- MOSES – machine translation
- ...

Medical Databases

- Extremely large repositories
  - 100s of Terabytes
  - Zetabytes of Meta-Information

- Open access publishing is expanding
  - BiomedCentral
  - Many closed access journals are available after 12 months, also through public pressure

- Knowledge bases exist
  - UMLS, MeSH, SNOMED
  - Linked Life Data
Khresmoi Consortium
References


