Benefits from content-based visual data access in radiology

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Medical Image retrieval

- Search large medical image repositories by their visual content, only, without the use of text

Introduction

- Many projects exist, specialized and general
- MDs describes their needs and computer scientists use the data they get
- Enormous amount of digital visual data will create a need for alternative access methods to images other than text
- Visual features complement text

Problems

- No system is currently used in clinical routine
- Lack of communication between MDs and computer scientists
- Quality of retrieval is limited and technology needs to be understood by users

Potential and possibilities

- Fills the void of need image management tools
- Manages massive amounts of visual data in an automatic way and allow access
- Feedback allows to learn from user behaviour

Casimage

Functionality

- Storage and consultation of interesting or typical cases with text and images
- http://www.casimage.com/
- Used in everyday routine (>40'000 images)
- Internal and external databases (anynomization)

MIRC compliance

- Medical Imaging Resource Centre
- http://mirc.rsna.org/
- Resources are accessible world-wide by various clients
- Can this be extended to Query by Example?

MedGIFT

Open Source

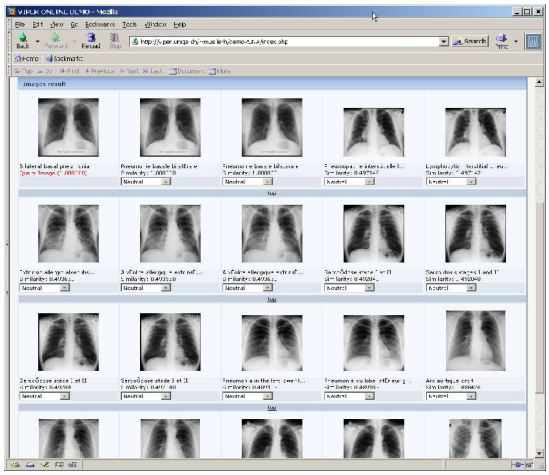
- Software is free under a GPL (GNU General Public Licence) including source code
- Free software can help the medical sector
- http://www.gnu.org/software/gift/
- Open Source Health Care Alliance (oshca)

GIFT/Viper

- Web demonstration http://viper.unige.ch/
- GIFT – GNU Image Finding Tool
- Research in mixed colour image databases

Adaptations for the medical domain

- New web-based interface that includes the diagnosis and a link to the Casimage system
- Features that are less based on colours and more on textures
- Description: http://www.sim.hcuge.ch/medgift/



Benefits

Teaching

- Students can browse large image repositories by their visual content
- Lecturers can find important or interesting cases based on visual similarity to show effects and potential problems

Research

- Search for cases can be optimized for queries
- Images can be found for publications
- Visual characteristics can be included into studies

Diagnostics

- Case-Based Reasoning
- Evidence-Based Medicine

Discussion

- Technique has the potential to be a key for managing visual medical data
- Technique needs to be understood for optimal use (advantages and limits)

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