Using open source software for medical image retrieval

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Abstract

The rising amount of visual medical data creates a need for new tools for retrieval and management of audiovisual documents. Content-based visual retrieval is such a technology, allowing the navigation of image databases without the use of text-based queries. This is used to support the finding of images for research and teaching, and also as a diagnostic aid in fields such as evidence-based medicine. Being a research domain, the exchange of system components and technologies is important for efficient development. Open Source software allows such an exchange through source code.

Keywords:

Open Source, GNU Image Finding Tool, Medical Image Retrieval, Content-Based Visual Data Access

Medical open source software

Besides the widely known open source projects such as Linux, Apache and OpenOffice, there are quite a few medical open source projects and initiatives such as OSHCA (Open Source Health Care Alliance), Minoru (`http://www.minoru-development.com/en/healthlinks.html`) and linuxmednews (`http://www.linuxmednews.com/`). Several articles promote the advantages of open source [1], the most frequently mentioned for the medical domain being vendor independence through available source code; reduced risk of bankruptcy, direction change of software producer, or data loss when migrating data; reduced total cost of ownership, including maintenance, software adaptation and user training; ease of adapting software for special needs and help through a large user community.

Medical image retrieval using *medGIFT*

Content-based image retrieval (CBIR) is a very active research area (eg. [2]). In the medical field, the use of CBIR has been shown to improve the diagnostic process [3]. The medGIFT project [4] (`http://www.sim.hcuge.ch/medgift/`) uses the GIFT (GNU Image Finding Tool, based on Viper [5], `http://www.gnu.org/software/gift/`) image retrieval platform, allowing us to profit from and share in the developments of other users and researchers. The system is adapted to medical images by emphasising the importance of grey levels and textures, rather than colour features best suited to stock photo databases. A web interface shows the diagnoses of retrieved images and links to casimage ([6], `http://www.casimage.com/`), a teaching file system, with a textual description and further images of the case. The open source licence makes it accessible to researchers and MDs who cannot effort expensive products and research projects.

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