

CONTENT-BASED ACCESS TO MEDICAL IMAGE DATABASES

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Goal: The use of large case databases of digital images can help to compare cases with similar pathologies for teaching and diagnostics. Goal of our project is the implementation of content-based access using visual image features for the case database CasImage. All the images of the database are indexed and they can be searched using an example image or supplying a number of positive and negative examples together to refine the search.

Method: A freely available visual search tool, the gift (GNU Image Finding Tool), is adapted to index CasImage's database of images. The use of a standard query interface, MRML (Multimedia Retrieval Markup Language), allows querying the indexed images by their content from several applications. Gabor filters (for texture) and a histogram based on the grey values are used to describe the visual content of the images.

Results: Visual features that are used for stock photography are often of limited value for medical images. Specialized features lead to much better results. The content-based search is still a valuable tool to find similar cases in a case database based on their visual content, only. This technique can well complement the standard search technologies based on exact database entries or free text search.

Conclusion: Although the content-based visual access to medical images is a good complement to standard search technologies, there still is a need to develop specialized features for certain groups of images to allow the use in diagnostics. Research areas for the use are, for example, HRCT lung images, where the pathology can be described by a change in texture of the lung tissue.