MEDICAL IMAGE DATABASE MANAGEMENT SYSTEM KERNEL WITH IMAGE RETRIEVAL CAPABILITIES

V. Cornita, R. Strungaru, S. Pasca

Applied Electronics and Information Engineering Department, Faculty of Electronics, Telecommunications and Information Technology, University Politehnica of Bucharest, Romania
E-mails: cornita_vasile@yahoo.com, rodica.strungaru@upb.ro, pasca@colel.pub.ro

This paper presents an image database management system kernel with image retrieval capabilities based on semantic information associated with a specific image, target image and combined search. The Medical Image Database Management System Kernel(MiDBMSK), which is composed of two software applications: the MiDBMSK Server and Client, uses a typical three-layer architecture. For image retrieval by target source image, histogram intersection, histogram Euclidean distance and histogram quadratic distance are investigated. In this context, better search results are obtained when specific image has text semantic information attached and particular search takes into account this semantic information.

In today's fast-growing information age, multimedia data is becoming more and more common in daily applications; however this data is nearly useless if there is no computer-aided browsing, searching, and retrieving mechanism to obtain the desired information [1]

Medical database applications may vary widely but they all have common aspects such as image processing common component. Medical database systems must have incorporated appropriate tools for:
- Editing (i.e., display and modify information about patient history, tracking evolution in time of a specific disease using visual images and/or text semantic information)
- Querying (i.e. displaying similar disease cases and evolution in time of other patients compared to currently analyzed patient, predict disease evolution based in differential diagnostic and historical cases stored in the database) [2]

The implemented solution consists of two applications, the Database Server and a Client application that performs specific tasks in conjunction with the server. The software architecture used is a typical three-tired architecture, as depicted in the following picture:
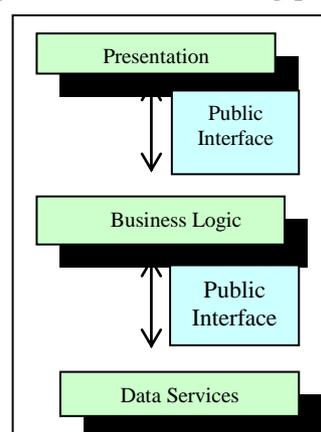

Figure.1 MiDBMS K software architecture.

[1] A. Soffer and H. Samet. (1998). Integrating symbolic images into a multimedia database system using classification and abstraction approaches, The VLDB Journal - The International Journal on Very Large Data Bases Volume 7, Issue 4 (December), 253 – 274

[2] A. Voisard. (1994). Designing and Integrating User Interfaces of Geographic Database Applications, Proceedings of the International Conference on Advanced Visual Interfaces (AVI), ACM Press, New York.