

## INFORMATION SYSTEM FOR ARCHIVAL MEDICAL IMAGES AUTOMATED PROCESSING

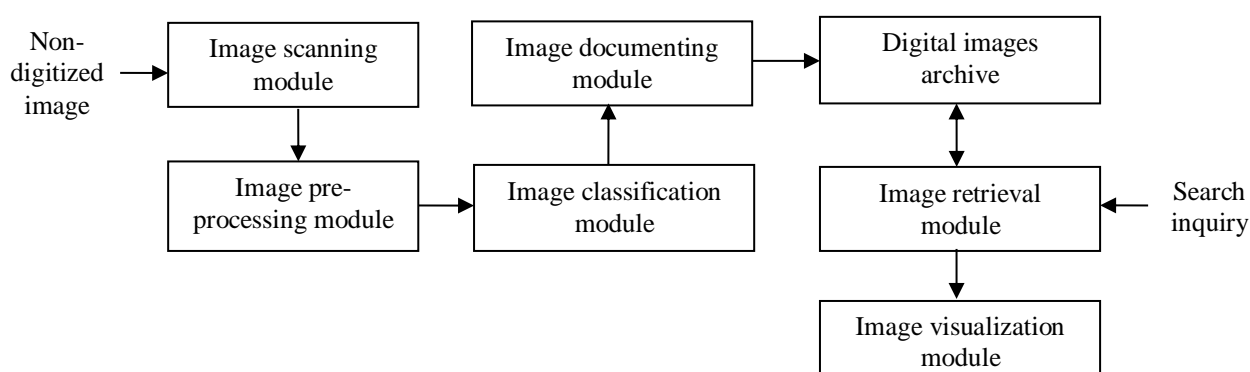
Y. S. Sulema\*, O. S. Shkurat

National Technical University of Ukraine "Kyiv Polytechnic Institute", Kyiv, Ukraine

\*E-mail: [sulema@pzks.fpm.kpi.ua](mailto:sulema@pzks.fpm.kpi.ua)

Medical imaging has a quite long history [1]. Since 1895, when the first X-ray picture had been taken, billions of medical images were taken around the world. Some of these images are still of interest for researchers as they illustrate specific medical cases. Some other images, which having been taken mostly during last decades, are important with respect to health of a certain patient. The important issue is that many of these images are not digitized, because they have been taken with using old-fashioned hardware. Thus, there are a number of non-digitized medical images archives, which are either stored in medical centres or kept by patients on their own and which require automated processing in order to be analysed, classified and used for research purposes and / or medical diagnostics and treatment of a certain patient. Therefore, the development of information technology for automated processing of archival medical images as well as the design of the information system based in this new information technology are the topical tasks.

According to [2], information systems are interrelated components working together to collect, process, store, and disseminate information to support decision making, coordination, control, analysis, and visualization. Therefore, the information system for automated processing of archival medical images might include modules shown in Figure 1.



**Figure 1.** The general scheme of the information system for automated processing of archival medical images

The procedure of collecting the archival medical images is an element of the proposed information technology. The result of this procedure is a set of non-digitized image originals ready for scanning. Since input images of this system can represent objects of different types (bones, soft tissues, cells, etc.) one of the important tasks is to classify input images. Therefore, the core module of the information system for automated processing of archival medical images is a module for automated image classification. The classification is based on a set of image features according to medical investigation type such as [3, 4] and other. The proposed information system can be used as an additional tool in medical expert systems as well as in telemedicine.

- [1] William G. Bradley. History of Medical Imaging. *Proceedings of the American Philosophical Society*, Vol. 152, No. 3 (2008), pp. 349-361.
- [2] Kenneth C. Laudon, Jane P. Laudon. *Management Information Systems*, 12<sup>th</sup> edition, Prentice-Hall (2012), 640 p.
- [3] A. V. Arya, B. M. Yan. Ultra high magnification endoscopy: Is seeing really believing? *World Journal Gastrointestinal Endoscopy*, Vol. 4 (2012), p. 462-471.
- [4] T. Wilson, M. Friedrich, A. Diaspro. Basics of Light Microscopy Imaging. *Special edition of Imaging & Microscopy* (2008), 52 p.