CAOBO WORD
Accent Graphics
Publising & Communications

8th International youth conference

"Perspectives of science and education"

29th March 2019

New York
2019

The 8th International youth conference "Perspectives of science and education" (March 29, 2019) SLOVO\WORD, New York, USA. 2019. 317 p.

ISBN 978-1-77192-403-0

The recommended citation for this publication is:
Busch P. (Ed.) (2019). Humanitarian approaches to the Periodic Law // Perspectives of science and education. Proceedings of the 8th International youth conference. SLOVO\WORD, New York, USA. 2019. Pp. 12–17.

Material disclaimer

The opinions expressed in the conference proceedings do not necessarily reflect those of the CSR «Solution», SLOVO\WORD, Accent Graphics Communications & Publishing or Premier Publishing s.r.o., the editor, the editorial board, or the organization to which the authors are affiliated.

The CSR «Solution», SLOVO\WORD, Accent Graphics Communications is not responsible for the stylistic content of the article. The responsibility for the stylistic content lies on an author of an article.

Included to the open access repositories:

eLIBRARY.RU

Typeset in Berling by Ziegler Buchdruckerei, Linz, Austria.

Printed by Premier Publishing s.r.o., Vienna, Austria on acid-free paper.

	THE ELECTORAL DISCOURSE (on the basis of the election campaigns in Eastern Europe).	
26.	ПІТУЛЕЙ Л. Д., КАРПИК Р. Т. ТЕХНОЛОГІЧНІ ФАКТОРИ ВПЛИВУ НА ТЕПЛОФІЗИЧНІ ПРОЦЕСИ ФОРМОУТВОРЕННЯ КОМПОЗИЦІЙНИХ ЗУБКІВ БУРОВОГО ІНСТРУМЕНТУ.	210
27.	ГОНЧАРОВА Н. М., ЧЕСНАКОВА Д.Д., МІЗІК А.О. ТАКТИКА ВЕДЕННЯ ПАЦІЄНТІВ З МЕХАНІЧНОЮ ЖОВТЯНИЦЕЮ ВНАСЛІДОК БЛАСТОМАТОЗНОГО УРАЖЕННЯ ГЕПАТОПАНКРЕАТОДУОДЕНАЛЬНОЇ ДІЛЯНКИ.	219
28.	KOTLIAROVA YU. O. PRINCIPLES OF DIGITAL TRANSFORMATION OF MARKETING RESEARCHES.	226
29.	ГОТЕНКО К.А. ОСОБЛИВОСТІ ФОРМУВАННЯ МОВНОЇ КОМПЕТЕНТНОСТІ В МАЙБУТНІХ ПРАВООХОРОНЦІВ.	235
30.	ТАРАНЕНКО О.П. ЦЕНТРАЛІЗАЦІЯ ТЕНДЕРІВ ЯК ЕФЕКТИВНИЙ ДЕРЖАВНО-УПРАВЛІНСЬКИЙ МЕХАНІЗМ ЗАПОБІГАННЯ КОРУПЦІЇ У СФЕРІ ПУБЛІЧНИХ ЗАКУПІВЕЛЬ.	240
31.	YANISHEN I.V., MASLOVSKYI O. S., BEREZHNA O.O., FILATOV I.V., KULISH S.A. EXPERIENCE IN DEVELOPMENT OF AUTOMATED SYSTEMS FOR MAINTAINING HISTOLOGICAL RESEARCHES.	244
32.	КРИЛОВА І.І. ДЕРЖАВНІ ПРОГРАМИ У СФЕРІ ВОДОПОСТАЧАННЯ ТА ВОДОВІДВЕДЕННЯ ЯК ІНСТРУМЕНТ ДЕРЖАВНОГО РЕГУЛЮВАННЯ.	248
33.	ТКАЧЕНКО М.М., ПОПЕРЕКА Г.М., ДУБРОВІНА Г.В., БІЛА В.В., САМОЙЛОВА І.В., ТОЛСТІКОВА Т.М. ЗНАЧЕННЯ КЛІНІЧНОЇ БАЗИ ПРИ ВИВЧЕННІ ДИСЦИПЛІНИ «РАДІАЦІЙНА МЕДИЦИНА».	259
34.	МАНЬКО А. М. ПРОБЛЕМА ГОЛОДУ У ПОЕТИЧНІЙ СПАДЩИНІ ІВАНА НИЗОВОГО.	263
35.	ПОПОВИЧ Т. П., ТЕЛЕП Ю. В. МЕТОДОЛОГІЯ ДОСЛІДЖЕННЯ ДЕМОКРАТИЧНОГО ДЕРЖАВНОГО РЕЖИМУ.	272
36.	ONYSHCHAK H. V. SEMANTIC STRUCTURE OF THE ENGLISH NOUNS DENOTING EVIL WITH THE HIGH DEGREE OF POLYSEMY.	281
37.	ДЕНИСОВА А.В. ДИСКУСІЙНІ ПИТАННЯ ЩОДО ЗАПРОВАДЖЕННЯ АДМІНІСТРАТИВНИХ ДОГОВОРІВ ЯК ПРАВОВУ ФОРМУ ДІЯЛЬНОСТІ НАЦІОНАЛЬНОЇ ПОЛІЦІЇ УКРАЇНИ.	286
38.	ТРОЯН А.О. ГРОВІ МЕТОДИ ВИВЧЕННЯ УКРАЇНСЬКОЇ МОВИ ЯК ІНОЗЕМНОЇ.	290

EXPERIENCE IN DEVELOPMENT OF AUTOMATED SYSTEMS FOR MAINTAINING HISTOLOGICAL RESEARCHES

YANISHEN I.V.
M.D., professor,
head of orthopedic dentistry department

MASLOVSKYI O. S.
PhD, associate professor of orthopedic dentistry department

BEREZHNA O.O.
PhD, associate professor of orthopedic dentistry department

FILATOV I.V.
assisnant of orthopedic dentistry department

KULISH S.A.
assisnant of orthopedic dentistry department
Kharkiv National Medical University, orthopedic dentistry department.
Ukraine, Kharkiv.

Abstract. The work is devoted to design the system for automatized histological research. The problems of digital processing for histological images are described. The root principles of design, main issues of imaging processing and structure of the system for automatic histological research are proposed. Main medical technical requirements for proposed system are considered.

Keywords: histological researches, automated systems.

Introduction. At the present stage of development of medical technology, there is a tendency of improving the quality and degree of automation of methods for processing histological data. Manual morphometry methods have relatively low

accuracy and high difficulty of research. The error is more than 10-15% [1] and it is associated with the determination of the geometrical parameters of micro-objects. Therefore, obtaining statistically reliable information using manual methods is ineffective and subjective [2-4]. Therefore, in connection with the appearance on the market of medical equipment of affordable, high-quality digital photo and video cameras that can be connected to a microscope, as well as appropriate software, it is advisable to consider the principles of building automated systems for histological studies.

In this case, the main emphasis in the design of such systems should be placed on the selection and coordination of the optical parameters of the microscope and the digital recording device, as well as image processing algorithms for automatized count and analysis of micro-objects.

Content. Based on modern requirements for the processes of diagnosis and analysis of medical information, a developed system for the automated processing of histological data should have the following medical and technical requirements :

- ensure receiving and digitizing the original data with the highest possible resolution for a given type of research (necessary to carry out an informed choice of necessary equipment, lab microscope and the digital imaging of histological preparations);

- carry out scanning and analysis of color and brightness components, in separate channels with the possibility of transition to different color coordinates;

- provide preprocessing of images, including methods of histogram correction, as well as the noise suppression components;

- perform coarse and precise image segmentation to determine the localization of various objects with the maximum degree of automation;

- to ensure the receipt and analysis of metric features of objects (area, perimeter, intensity, dominant color tone, etc.);

- to ensure the receipt and analysis of the logical and topological features of the objects (indicators of the shape of the object, the number of holes and connected areas in the image of the object);

- provide the possibility of structural analysis of objects;

- perform classification and recognition of detected objects according to one dominant feature or group of features;

- to carry out a visual visualization of the analysis process, the results of the main, intermediate and final processing steps;

- provide the possibility of interactive correction of the processing parameters of histological images, in which the participation of the operator should be reduced to the selection of the necessary parameters in an intuitively understandable and functional software UI;

- provide statistical processing of the results of the study (correlation-regression and analysis of variance);

- ensure the possibility of printing the main results of the analysis and storing them in a database and using them in telemedicine technologies.

Hardware accuracy, determined by the resolution of modern digital cameras (more than 1 MegaPixel) , is enough for most histological studies using optical microscopy. However, despite the fact that the already developed quite a number of universal and specialized software for medical imaging, the main problem at this stage is the development of effective methodological and algorithmic software for automated analysis of histological data, allowing to obtain the most complete information about the test image .

For this, you must classify image of histological objects by geometric, topological, optical characteristics. You should also develop algorithms for image preprocessing of histological preparations; segmentation algorithms for various cell types, taking into account the staining of micropreparations; develop algorithms for automated counting and analysis of selected microobjects, made software implementation of segmentation algorithms for histological objects and check them with specific examples of histological preparations.

Conclusion. The development of automated systems for histological studies requires an integrated approach aimed at harmonizing the methods and algorithms of image preprocessing and automatized data analysis. This is due to the fact that

universal image processing algorithms, comparable in capabilities with the human visual perception, have not yet been developed. The quality of work of such a system can be influenced by such factors as the variability of micro-objects on the preparations, the presence of a complex background in the image, illumination heterogeneity, local interference, etc. The original software developed by the authors allows to solve this problem so far only for a relatively small range of micro-preparations. The developed system can be used for the analysis of preparations of the human brain, oral mucosa and ENT-organs, as well as in the diagnosis of diseases of the dental system. The perspectives of the work is the further improvement of data processing and analysis methods based on the study of the processes of human visual perception.

Literature:

1. К Исаков В.Л. Тенденции и перспектива разработки цитологических анализаторов / Автоматизация цитологических исследований. Сб. науч. трудов АН УССР, – К.: Наукова думка, 1990, – С. 78-79.

2. Симсон Э. А. Оптимизация в проектировании: теории и приложения / Э. А. Симсон, С. А. Назаренко // Инфиз: очерки истории творчества. — Харьков: Энерго Клуб Украины, 2015. — С. 329–345.

3. Компьютерное моделирование процессов и состояний сложных систем: обоснование параметров моделей расчетно-экспериментальным путем / Ю. В. Веретельник [и др.] // Вісник Нац. техн. ун-ту "ХПІ": зб. наук. пр. Сер.: Машинознавство та САПР. – Харків : НТУ "ХПІ", 2017. – №12 (1234). – С. 14-25.

4. Свешников Л.В. Компьютерная обработка и анализ изображения, полученного при световой микроскопии / Морфология. 2006, – Т.129. – С. 85-86.