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БУКОВИНСЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ»

М А Т Е Р І А Л И

105-ї підсумкової науково-практичної конференції
з міжнародною участю
професорсько-викладацького персоналу
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Матеріали підсумкової 105-ї науково-практичної конференції з міжнародною участю професорсько-викладацького персоналу Буковинського державного медичного університету, присвяченої 80-річчю БДМУ (м. Чернівці, 05, 07, 12 лютого 2024 р.) – Чернівці: Медуніверситет, 2024. – 477 с. іл.

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У збірнику представлені матеріали 105-ї підсумкової науково-практичної конференції з міжнародною участю професорсько-викладацького персоналу Буковинського державного медичного університету, присвяченої 80-річчю БДМУ (м. Чернівці, 05, 07, 12 лютого 2024 р.) із стилістикою та орфографією у авторській редакції. Публікації присвячені актуальним проблемам фундаментальної, теоретичної та клінічної медицини.

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layers in organic-based photovoltaic devices.

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DEVELOPMENT OF STATISTICAL ANALYSIS SOFTWARE

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Introduction. Statistical analysis plays a pivotal role in modern medical research by providing the means to extract meaningful insights from vast and complex datasets. It allows researchers to identify patterns, correlations, and statistically significant findings, which are essential for evidence-based decision-making in healthcare. Moreover, statistical analysis helps ensure the reliability and validity of research findings, ultimately improving the quality of medical research and its impact on patient care and treatment outcomes.

The aim of the study. This paper focuses on the development of statistical analysis software specifically tailored for medical scientific research.

Material and Methods. Statistical software was built by using Google tables.

Results. The main advantage of the developed software is its ability to analyze big data sets. Using the proposed software, one can input information about several tens of laboratory indicators from two researched groups and apply statistical tests to all indicators at once.In addition to descriptive statistics, which includes mean, median, standard deviation, and interquartile range, there are a number of parametric and nonparametric tests available in the software. Parametric tests are represented by paired and non-paired t-tests, ANOVA, while nonparametric tests include the Wilcoxon, Mann-Whitney and Kruskal-Wallis tests. For correlation analysis, one can use Pearson, Spearman, and Kramer correlation. For nonnumerical data, the software provides odds ratio, chi-squared test and Fisher's exact test.

Conclusion. Thedeveloped statistical analysis software is a powerful tool for medical research, offering the capability to handle large datasets and a wide range of statistical tests for both numerical and nonnumerical data.

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PROSPECTS FOR MEDICAL APPLICATIONS OF HYPERSPECTRAL IMAGING

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Introduction. A hyperspectral image (HSI) is an array of two-dimensional images of objects that contains information about each point of objects in a wide spectrum of electromagnetic radiation. HIS is used in many fields. All uses are united by the fact that this scanning mode allows you to identify and display the spatial distribution of the studied substances in objects. The physical basis for the identification of substances is that each substance has a unique set of frequencies in the optical absorption spectra – the so-called optical fingerprint. However, different substances exhibit their optical fingerprints in different parts of the electromagnetic spectrum. That is why the technique of HSI involves obtaining images in a wider spectral range than visible.

The aim of the study.To review the existing applications of hyperspectral research in medicine and, based on the physical limitations of equipment and mathematical limitations of processing methods, to outline possible prospects for the use in medicine.

Material and methods. In medicine, the ability to identify and visualize the distribution of substances makes it possible to obtain the diagnostic information about the composition, morphology and physiological processes in the tissues of the human body. This is used in non-invasive methods of diagnosis and support of surgical operations. The light inside the biological tissues is repeatedly reflected by the inhomogeneities of biological structures and is eventually absorbed mostly by melanin, water, fats, and hemoglobin. One of the technique’slimitations is that depth of penetration of light into biological tissues differswith wavelength. The penetration depth depends on the light absorption degree by substances during its propagation. Substances selectively absorb light, which makes it possible to detect their presence in a biological object. In the IR range,