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“Multidisciplinary Problems of E-medicine”

ABSTRACTS

SESSION I. SCIENTIFIC AND THEORETICAL PROBLEMS OF ICT IN MEDICINE

E-MEDICINE: ESSENCE, OPPORTUNITIES, PROBLEMS

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Abstract — The article analyzes the factors and tendencies that determine the necessity of creating e-health. E-health objectives, nature and possibilities are shown. International experience in the field of e-health is reviewed, works done on the establishment of e-health in Azerbaijan are informed, main problems that hinder the growth of the e-health systems are noted.

Keywords — e-health, electronic medical card, Ferdmerkezli approach, single medical information space

THE ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN AZERBAIJAN MEDICAL UNIVERSITY TEACHING THERAPEUTIC HOSPITAL MANAGEMENT SYSTEM, CHALLENGES AND OBJECTIVES

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Abstract — The paper analyzes the current position of the application of ICT in Azerbaijan Medical University Teaching Therapeutic Hospital Management System. Problems in this sphere are investigated and works will be done on eliminating all of these problems are noted.

Keywords — The health system, ICT, clinic, management system

THE BIG DATA ERA IN HEALTHCARE

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Abstract — In this article the issue of big data is previewed, the essence of big data is described which is considered key motivating force of the information society. As in other fields the sources, possibilities of big data are interpreted in healthcare. Some created problems of big data in healthcare are also analyzed.

Keywords — Big Data, healthcare; e-medicine; genome; bio-medicine; telemedicine; electronic health records; personal medical data

DATA MINING TECHNOLOGY IN MEDICINE

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Abstract — The paper describes the aims, objectives and stages of knowledge discovery in databases and data mining. The role of data mining in analysis of medical data is investigated and listed its stages. Problems, limitations and trends in application of data mining techniques to medical data are.

Keywords — knowledge discovery in database; data mining; medical data mining

DIAGNOSTIC ANALYSIS OF ELCTROCARDIOGRAPHIC SIGNALS BASED ON WAVELET TRANSFORM

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Abstract — The notice deals with studies on analysis of cardiographic information based on mathematical-cybernethical aids and on solving automated diagnostic problem. Unlike traditional spectral methodology, the applied wavelet algorithms have some advantages. Medical-cardiological information of R-R intervals are tested for processing by means of some wavelet construction, and graphic representations of a m0re effective variant are discussed.

Keywords — ECG signal, wavelet analysis, adaptive filtration

E-HEALTH: ACTUAL PROBLEMS OF INFORMATION SECURITY

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Abstract — E-health promises a variety of perspectives in the field of access to quality health services and information. Along with this, it leads to a number of privacy and information security threats. This paper briefly looks at main development trends in the field of e-health, characterizes major information security threats in terms of the potential risk, and analyzes important information security mechanisms. Actual scientific and practical problems are identified for ensuring information security in e-health systems, including wireless sensor body networks.

Keywords — e-health, m-health, personal health data, information security, privacy, de-identification, WSBN

USING TIME SERIES MODELLING OF MYCOSES EPIDEMIOLOGY AND SPREADING IN BIOMEDICAL RESEARCH

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Abstract — The paper deals with models and modeling processes in biomedical research. The authors select data from models built by mathematical and biostatistical methods, time series from mathematical models are built, and their application is based on the considered example. The results of the research conducted in various organizations in Ganja and Kurdamir are demonstrated.

Keywords — mathematical model, mycosis, random quantity, time series, trend line, biostatistical methods

FROM BLOOD BANK TO INFORMATION BANK: PROBLEMS AND SOLUTIONS

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Abstract — Currently the blood service is a complicated medical-industrial complex and its operation consists of collection, storage and distribution of blood and its components, as well as supervising the proper use of transfusion means by treatment-and-prophylactic institutions (TPI). Automated data collection and processing system is the only tool that will allow to take into consideration the growing number of factors that influence the Blood service now and in the future and to make optimal management decisions. Taking this into account a unified blood services information system has been developed.

Keywords — blood service, blood bank, database, computerization

CLOUD CONVERSION ISSUES OF ELECTRONIC HEALTHCARE CARDS

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Abstract — This paper is devoted to the investigation issues of current state of the application of electronic healthcare cards. For this purpose electronic healthcare card, general structure of electronic healthcare card system are described, current state of the electronic healthcare card of international environment and Azerbaijan Republic are investigated. Advantages and disadvantages of electronic healthcare cards, cloud computing application scenario are investigated, application problems of the electronic healthcare card system are identified and for their solution some suggestions and proposals are given.

Keywords — e-Health, electronic healthcare cards, electronic healthcare card system, electronic health records, cloud computing

E-MEDICINE AND CLOUD TECHNOLOGY: OPPORTUNITIES ANS PERSPECTIVES

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Abstract — The paper analyzes cloud technologies, models and services. The advantages of using cloud technologies in the medical field and the projects implemented on the basis of this technology are investigated.

Keywords — cloud technologies, cloud services, model, e-medicine

MATHEMATICAL MODEL FOR DIAGNOSIS AND PROGNOSTICATION OF PERITONITIS

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Abstract — The method for the diagnosis and prognostication of the course of peritonitis proposed in the paper uses prognostic symptoms and syndromes to identify and organize the parameters with informative attributes. Data processing is carried out in four stages. Three modules, "Background situation", "Diagnosis", "Prognosis", are provided. Peritonitis is broken up into three modules according to the degree of severity, and the recognition mechanism is based on discriminant analysis. The proposed method has been tested in the surgery department of A.D. Melikov Hospital of Baku.

Keywords — knowledge base, symptom, syndrome, peritonitis, recognition, method, analysis, diagnosis, prognosis

ENTROPY CHARACTERISTICS OF MEDICAL DECISION-MAKING SYSTEMS

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Abstract — The paper analyzes the characteristics of entropy in medical decision-making system. It shows that the minimization of entropy of systems improves the quality of medical decisions.

Keywords — medical decisions, knowledge base, entropy

CONCEPTUAL BIG DATA ARCHITECTURE FOR E-HEALTH

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Abstract — Big Data technology presents important approaches and tools for building e-health systems. In this paper, a conceptual architecture of the hybrid cloud Big data platform for e-health systems is proposed. The architecture allows storage of large volumes of real-time medical data in various formats and analysis of this data with deep analytics and machine learning methods in distributed cluster systems. Selection of appropriate tools from the Hadoop ecosystem is considered for creation of a viable Big Data solution.

Keywords — e-health, Big Data, Hadoop, Apache Spark, Big Data Analytics, MapReduce, Big Data architecture

ABOUT IDENTIFICATION OF DIABETIC AUTONOMOUS CARDIOMYOPATHY IN ECG SIGNALS

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Abstract — The paper analyzes that 347 000 000 population on earth suffer from diabetes. In 2005-2030, the number of people suffering from diabetes is likely to increase in 2005-2030 according to the International Sugar Federation. 80% of people living in countries with low life conditions suffer from diabetes.

Keywords — diabetes; autonomic neuropathy; patient; Cardiomyopathy kardioneyropatiya

MEDICAL WEBSITES: IMPORTANCE, PROBLEMS AND SOLUTION WAYS

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Abstract — The article highlights the importance of Internet resources for information support of activities in the medical field. The influence of the web-based technologies development on medical websites is shown. Medical websites are classified. The basic problems and risks associated with their use are revealed. The results of the monitoring of medical websites of Azerbaijan are given.

Keywords — Web 1.0, Web2.0, Web3.0, medical websites, classification of medical websites, Health On the Net Foundation (HON), data confidentiality

COMPLEX PATTERN RECOGNITION IN MEDICAL RESEARCH

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Abstract — The process of identifying information-valuable attributes for pattern recognition is often empirical and subjective, depending on individual experience and intuition. The paper deals with problems related to ultrasonic investigation. The authors propose the method of mathematical morphology for identifying thyroid nodules and formulas for calculating their mass to ensure objective assessment of ultrasonic scans.

Keywords — mathematical morphology, pattern recognition, erosion, ultrasonic irradiation, classifier, binary image, thyroid

E-MEDICINE AS PART OF THE E-SCIENCE

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Abstract — The article is devoted to the topical issues of e-medicine. The main issues as a part of e-science, international support in this field is investigated and the main directions of its development are given. The role of e-medicine in realization of consumer-oriented 4P medicine is identified.

Keywords — e-medicine, e-science, e-health, medicine 2.0, 4P medicine concept

RESEARCH OF EVOLUTIONARY FEASIBILITY OF CONCURRENT REDUPLICATION

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Asbtract — The existing models of the primordial life cycle are based on the assumption of reproduction advantage gained in non-concurrent reduplication of the nucleotide sequences due to reduced likelihood of erroneous or incomplete sequences. However, this assumption is not entirely satisfactory as the evolution of the reproductive organelles in nature does not rule out error-free concurrent synthesis of the dual spiral. Any explanation of the lack of concurrent reduplication mechanism in the contemporary Biosphere should be based on more rational constraints of Biological Kinetics. In this work, we present a model of concurrent reduplication with coupling of concurrent processes, and demonstrate that the parallel processes "degenerate" into a single process in the presence of substrate diffusion across the locus of reduplication.

Keywords — reduplication, diffusion, substratum, biosphere, biokinetics, model, dual spiral

THE EXPERIENCE OF INTERNATIONAL ORGANIZATIONS AND FOREIGN COUNTRIES ON E-MEDICINE: CHALLENGES, STRATEGIES AND CONCEPTIONS

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Abstract — The paper analyzes the strategies and conceptions of international organizations and some countries applied on e-medicine. Recommendations are proposed related to the informatization of e-health in Azerbaijan.

Keywords — e-medicine, e-health, electronic medical cards, medical information systems, e-Health, e-receipt, big data

ELECTRONIC HEALTH AS A SEGMENT OF ELECTRONIC GOVERNMENT

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Abstract – In paper the electronic health is investigated as one of the segment of electronic government. International practices and electronic health strategies adopted in Europe in the area of electronic health are analysed. Existing practices in the area of electronic health services in G2C are researched and perspectives are shown.

Keywords — e-medicine, e-government, G2C, medical institutions, e-service, electronic medical card

ECONOMICAL REGULATION PROBLEMS OF ELECTRONIC MEDICINE IN INFORMATION SOCIETY CONDITIONS

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Abstract – The article is dedicated to the economical regulation problems of electronic medicine technologies in information society conditions. The necessity of requirement of medical information and development of medical technologies of new society are grounded. The content of innovations of e-medicine technologies in the information society conditions is explained. The innovative potential and development directions, commercialization perspectives of e-medicine technologies are analyzed. The solution ways of economical problems while using medical services of foreign countries by country citizens are suggested.

Keywords – medical information and knowledge resources, medical innovation, e-medicine technologies, commercialization of medical innovation, health economics

CREATING APPROACH OF STATISTICAL DATA OF E-HEALTH AS PER INTERNATIONAL PRACTICE

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Abstract – Analyses of statistical information in modern medical information systems increases quality of medical services offered to population, as well as availability of medical services in remote territories. The ways of improvement of management system and availability of medical services for population of Azerbaijan are determined. Advantages of foreign practices of electronic exchange of medical statistics in order to provide the modern methods of management of healthcare are shown.

Keywords – medical statistics, Electronic Health Records, e-health, promoting health, electronic exchange data

INFORMATION SECURITY ISSUES OF MOBILE PATIENTS HEALTH MONITORING SYSTEMS

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Abstract – The wireless mobile monitoring of patients' health is a very important service of healthcare. In this case, the information security of the wireless mobile monitoring of patients' health systems is vital. The article deals with security problems, security threats, as well as measures to ensure the security of the wireless mobile monitoring of patients' health systems.

Keywords – patient health monitoring, wireless sensor networks, information security, information security threats, information security measures

ANALYSIS BIG VOLUME MEDICAL DATA: CURRENT PROBLEMS AND PROSPECTS

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Abstract – Increase in data volume and demand for ad hoc analysis of data created one of the biggest problems of Big Data called Big Data analysis. The article deals with actual problems of a large analysis of data generated in the field of health, explores the main characteristics of the data. At the same time it defines the various opportunities, advantages and characteristics of the date in the area of health and gives a number of recommendations.

Keywords – data warehouse, big data, big data analytics, biometric data, evidence-based medicine, genomic analytics

SECURITY PROBLEMS OF PERSONAL HEALTH INFORMATION ON ONLINE ENVIRONMENT

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Abstract – In this paper security issues of personal health information on online environment are studied. The terms of electronic health records and systems are clarified, standardization organizations in the field eHealth, deployment models carrying out the collection of personal health information are described. An international experience upon the protection of personal health information is being investigated, security and privacy problems are determined and for their solution some suggestions and proposals are given.

Keywords – e-Health, electronic health records, personal health records, e-Receipt, patient biography, mobile health

THE MEDICAL ELECTRONICS: STATUS, PROBLEMS AND PROSPECTS

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Abstract – considered medical electronics applications, the state and prospects of use. The different types of medical electronic devices and their classification are given.

Keywords – medical electronics, electronic devices in medicine, robotic surgery, 3 D printing, drones, m-health, home medicine

PROBLEMS OF THE FORMATION OF TERMINOLOGY ON ELECTRONIC MEDICINE

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Abstract – The paper is dedicated to the analysis of the terms, which covers various aspects of the use of information and communication technologies in the medical field. Paper showed the emerging of terminology in this field in the early years of the XX century, and to continue improving in the current era. The development of information technologies, meanwhile the enhacing spectrum of issues, resoluting through the development of ICT caused by the gradual expansion of the concepts, was proposed. Electronic medical card terms have been clarified.

Keywords – telemedicine, e-medicine, e-health, e-medical card, medical informatics

PROBLEMS OF E-MEDICINE

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Abstract –The paper analyzes the juridical problems of e-medicine. International legal norms existing in this field are presented. The main directions of the legal policy of the state are shown. As well as jurisdiction and licensing related to electronic medical relationships, personal data protection is covered in the article.

Keywords – e-medicine, private information, the rights of patients, privacy, transnational medical services

THE USE OF WIKI TECHNOLOGY IN E-MEDICINE

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Abstract – Recently, the use of wiki technology is observed in various fields. Wiki technology used in the e-medicine and currently there are various approaches in this respect. This article provides information about wikimetrics, showing possibilities of wiki technology and methods for their use in e-medicine.

Keywords – e-medicine, wiki technology, wikimetrics, wiki-medicine

STRUCTURISATION OF STATISTICAL INFORMATION IN FORMATION OF MEDICAL DATAWARE

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Abstract – The article is dedicated to identification and structural analysis of statistical information necessary for valuation and analysis of treatment processes in health information systems. Information provision issues of the activity of medical institutions and some factors that influence the development of informatization of health are shown. The role of statistical indicators in decision-making processes, types, goals of statistical research, also statistical standards and criteria researched in detail. Comparative analysis of hospital indicators is given.

Keywords – medical indicators; medical services; statistical indicators; statistical standards and criteria; medical dataware.

E-MEDICINE AND 3D TECHNOLOGIES

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Abstract – The paper analyzes the possibilities of 3D technologies in medicine and its connection between 3D print and E-medicine. The 3D printer models of the human body parts and its effectiveness are presented.

Keywords – 3D graphics, 3D printer, computer graphics, 3D technology, 3D model

DIAGNOSING DISEASES AND SECURITY ISSUES BASED ON A PERSON'S PALM PRINT

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Abstract – In this study it is talked about using dermatoglyphics research to determine the various diseases and security issues of biometric technologies. It is also discussed the security issues of biometric systems in e-medicine.

Keywords – palmprint, electron medicine, dermatoglyphics, biometric indicators

SESSION II. PRACTICAL PROBLEMS OF ICT IN MEDICINE

APPLICATION OF SUPERCOMPUTERS IN E-MEDICINE

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Abstract – In this paper, it is mentioned that supercomputers are used in order to solve emerging field of medicine's complex tasks which requires high-level computing and storage resources. Tasks of properly diagnosing, finding effective treatment methods and medication preparation with the help of expert systems created by supercomputers are noticed.

Keywords – e-medicine, supercomputer, genome, cancer, Watson, DNA, Hepatitis C, computing resources

MEDICAL EXPERT SYSTEMS: HISTORY, DIRECTIONS AND CURRENT MEDICAL EXPERT SYSTEMS IN AZERBAIJAN

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Abstract – Paper presents information on the history of medical expert systems as a direction of artificial intelligence, the topicality of the development of decision-making suporting systems referring to expert knowledge in the hardly formalized medical problem solution is justified, the directions of medical expert system application are stated. Information about modern medical expert systems and ES developed in Azerbaijan is given. Recommendation on the development of knowledge engineering, on giving consideration to the knowledge engineers training for ES generating in the Republic,and the increase of the activities in the direction of the exploitation of the developed systems are proposed.

Keywords – medical expert systems, knowledge engineering, diagnostic expert systems, monitoring systems

BLOOD BANK DATA AND ONLINE DONOR APPOINTMENT SYSTEM

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Abstract – The paper analyzes the establishment of online services that increase the quality of service in different areas,the lack of online services in health systems.In order to meet requirements for blood and blood components "Online donor" appointment system model is offered to eliminate the problems that arise during the search volunteer donors. Model is intended to invite donors created through the online registration at the request of the patient's donor base of voluntary blood donors to give a greater likelihood of being selected to be invited to the blood bank predicts.

Keywords – blood bank, donor, online "appointment" system

MONITORING OF CARBON MONOXIDE POISONING AND INTELLECTUAL INFORMATION SYSTEM DIAGNOSTICS

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Abstract – The paper analyzes according to the statistics,the number of people poisened by carbon monoxide has dramatically increased over the past few years in Azerbaijan. The victim's comatose are one of the factors aggravating the problem. Same symptoms and syndromes can be seen in a variety of toxic substances intoxication. In this regard,implementation of differential diagnostics is indespensable.Intoxication can cause a variety of pathologies over time. For this reason, it is necessary to hold a monitoring.This article suggest to establish differential diagnostics and monitoring system as a way for solution challenges like these.

Keywords – differential diagnostics, monitoring,medicine base on evidience, carbon monoxide, frame, production rules

SYSTEM OF NOISE MONITORING OF CHANGES IN HEART AND RESULTS OF EXMEREMENTS ON LAPTOP

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Abstract – In the article noise tecnologies for analysis the characteristics of heart sound are given. By means of these characteristics monitoring of latent period of changes in heart activity is carried out. The results of experements are given. In the article the concept of the system of monitoring is also demonstrated.

Keywords – noise, heart sound, correlation function, cardiovascular system, heart diseases, the system of monitoring

TASKS APPLICATION OF BIOMETRIC TECHNOLOGIES IN ELECTRONIC MEDICAL

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Abstract — In the work, study of the use of biometric technologies and their possibilities and prospects of electron medicine were analyzed. The use of biometric technology in medicine increases the reliability of health and medical services. Touched identification based on photos of human head and his skull. Investigated the possibility introducing of biometric technologies in electronic medicine and their advantages were noted.

Keywords — Biometric technologies; electronic medical; fingerprints; human skull

ORGANIZATION OF THE E-HEALTH IN AZERBAIJAN MEDICAL UNIVERSITY: CURRENT SITUATION AND PERSPECTIVES

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Abstract — The article specifies the priority directions of the organization of e-health in Azerbaijan Medical University.

Keywords — e-health, electronic submission, electronic exam, telemedicine, electronic bank of idea.

ON THE POSSIBILITY OF DEVELOP AN ADVISORY SYSTEM FOR FIXATION OF LONG BONE AT TRAUMATIC FRACTURES

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Abstract — One of the multiple cases in the medical practice is a limb fractures. Depending on the nature of the fracture and the features of the patient, the doctors make a decision on treatment and rehabilitation activities, including the decision on to use the overhead plate for fixing the bones for location, on methods of attachment, etc. In the paper is proposed the development of software systems, which can offer the recommendations for osteosynthesis in case of injury.

Keywords — fractures, fixing of tubular bones, osteosynthesis, 3D images

APPLICATION OF GRID TECHNOLOGIES IN E-MEDICINE

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Abstract — In this paper, it is broadly informed about application of grid technologies in medicine. Usage of grid technologies in order to solve emerging field of medicine's complex tasks which requires high-level computing and storage resources are analysed. BOİNC (Berkeley Open Infrastructure for Network Computing) platform which is used in distributed computing systems based on grid technologies and its working principles are investigated. Properties of World Community Grid project works on BOINC and analysis of tasks which's solution is provided in the framework of the project is noticed.

Keywords — e-medicine, grid, BOINC, World Community Grid, computing resources

MULTI-AGENT SYSTEMS DIAGNOSIS AND PROGNOSIS OF OCCUPATIONAL DISEASES

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Abstract — A huge number of real problems encountered in engineering, medicine, biology, ecology, economics, et al. are multivariable. If, however, in these areas to solve the problems of diagnostics, manage or forecast the obvious class of problems is becoming a multi-criteria. Construction of this class of tasks appropriate to implement a distributed system on the network in the form of multi-agent systems. In the article the structure of such a system. Identified agents, their operating modes, strategy, system requirements and the proposed multi-agent system architecture of differential diagnosis and prognosis of occupational diseases, functioning as a distributed system in the Intranet environment.

Keywords — professional pollutants, occupational diseases, expert systems, multi-disciplinary, multi-agent systems, agent strategy

ABOUT NETWORKS OF MOBILE PATIENTS HEALTH MONITORING

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Abstract — Mobile monitoring of patients' health is very important in terms of providing health services to people regardless of location, time and nature. The article deals with the mobile monitoring of patients' health issues and describes the implementation of the existing wireless mobile technology to address these issues.

Keywords — patient health monitoring, wireless sensor networks, wireless wearable sensor networks, wireless technology

ANALYSIS OF KNOWLEDGE REPRESENTATION MODELS IN THE NEUROLOGICAL DISEASES DIAGNOSIS EXPERT SYSTEM

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Abstract — In the article models of knowledge representation in the neurological diseases diagnosis expert system has been investigated. Here knowledge representation models are divided into two main models: production models and declaratory models. Because of production models have been many used in the past, as well as the declaratory models are modern, we use the ontology based model that is one of the declaratory model. By the same token ontology of NXDES project has been suggested and implemented to the six steps.

Keywords — knowledge representation, expert system, ontology, production, diagnosis,

APPLICATION OF INTELLECTUAL SYSTEM FOR SELECTING THE TYPE OF SURGERY IN THE TREATMENT OF CHRONIC OSTEMIELITA

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Abstract — The system based on technology and methods of artificial intelligence is suggested. The problem of surgery interference choice in a treatment of purulent osteomyelitis is solved. Identikit of the pathological center enables transition from difficult process of recognition of radiological pictures to advanced computer technology. Knowledge Base (KB) of "Intel-Sys" intelligent system is designed in the form of modified recurrent Hamming's network.

Keywords – intellectual system, expert system, a neural network, an identikit, osteomyelitis

PERSONNEL TRAINING IN E-MEDICINE ENVIRONMENT: CHALLENGES AND PERSPECTIVES

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Annotation — Dynamic development of information and communication technologies, their integration into medical sphere generate prerequisites for e-medicine formation. Today information technology (medical informatics) personnel training in e-medical sphere remains actual problem. Paper analyses a number of challenges, established strategies and programs aimed towards the solution of e-medicine human resource issues, the situation of medical informatics in republic is explained, appropriate recommedations are given.

Keywords — e-medicine human resources, medical informatics, medical informatics specialist, medical information manager, medical cybernetics

DATA SCIENCE AND ITS PROJECTION ON THE MEDICAL SPECIALTIES

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Abstract — In this article, the essence of Data Science is commented, the successful integration as a subject in the health sector is discussed. As well, the international experience of the teaching Data Science in the medical specialties is researched.

Keywords — big data; data science; data scientist; datalogogy, healthcare, medical informatics

SOME ISSUES ABOUT ELECTRONIC MEDICAL WASTE MANAGEMENT

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Abstract — The paper analyzes potensial dangers for human health and environment created by medical elaectronic waste. This justifies the need for the creation of a waste management system. The position of legislative framework which is part of a system in Azerbaijan and a number of developed countries are analyzed in comparison.

Keywords — wastes, medical electronic waste, environmental impact, harmful impact of e-waste for human health, sanitary-epidemiological norms, waste processing, waste management system

PROBLEMS OF INFORMATION SECURITY OF ELECTRONIC PERSONAL MEDICAL DATA

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Abstract — Problems of electronic personal data security are investigated. Approaches to provide information security of health data of patients in the world practice are displayed, specific features of the personal medical data are stated, and potential threats of privacy and safety of medical secret in the medical information systems are shown. The legal fundamentals of personal data security in Azerbaijan have been considered, and feasibility of the development of normative and methodical documents regulating information security of personal medical data is justified in the Republic.

Keywords — personal medical data, information security, privacy, medical secret, threats

APPLICATION OF SOFTWARE ENGINNERING ON E-MEDICINE

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Abstract — The article analyzes the introduction of modern information technologies in medicine and informes about the main areas of development of e- medicine . Existing medical- information systems, subsystems and standards applicable in this field are investigated. According to international practices, processes and trends in the creation of such systems are analyzed; problems in this area are shown.

Keywords — medical information systems, electronic card, open system architecture, DICOM, SNOMED CT, HL7

SCREENING SYSTEM FOR PREDICTING TYPE 2 DIABETES MELLITUS IN OBESE PATIENTS

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Abstract — The system of screening for predicting is offered. The system is designed on the basis of information technologies with the use of statistical methods of data processing. As a methods of the statistical analysis, analysis of variance are used. In the field of medicine for the predicting on individual screening is spent.

Keywords — analysis of variance; obesity; screening; type 2 diabetes mellitus

TELEMEDICINE

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Abstract — The paper analyzes the use and the role of telemedicine in e-health. The essence, duties of telemedicine, brief information about the history are shown. The main application areas of telemedicine and functional capabilities are investigated. Development status of telemedicine in the world and the CIS countries are described.

Key words — telemedicine, consultation, teletraining, telesurgery, mobile medicine, telemonitoring

TRAINING CONCEPT OF INFORMATICS IN MODERN HIGHER MEDICAL EDUCATION

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Abstract — The article discusses the condition of studying of computer science in the modern superior medical education. Provides 5-step concept of studying computer science at the modern superior medical education for the formation of e-health in Azerbaijan, indicate problems and their solutions.

Keywords — medical informatics, biometry, workstation, evidence-based medicine

FUZZY EXPERT SYSTEM FOR EPILEPSY DISEASE DIAGNOSIS

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Abstract — The article is devoted to the diagnosis of epilepsy as one of the most prevalent neurological diseases via computer. On account of impossibility of precise recognition among epilepsy types stated in the paper, the significance of fuzzy logic and expert knowledge application for epilepsy type arranging is justified. Fuzzy expert system for the diagnosis of various types of epilepsy has been developed.

Keywords — expert systems, diagnosis, fuzzy knowledge base, epilepsy, inference engine

BIG DATA POTENTIAL IN E-MEDICINE

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Abstract — The paper reviews the factors defining excessive growth of the information in medicine. The specific peculiarities of medical data are investigated in the context of Big Data; the essence of Big Data phenomenon and its potential in electronic medicine are defined. Big Data applications are systematized, and their capacity for the support of medical and diagnostic and management decisions is shown.

Keywords — Big Data, e-medicine, health data, Big Data-applications, decision-making

MEDICAL İNFORMATIZATION: SOME SOCIAL AND ECOLOGICAL PROBLEMS AND INNOVATIVE SOLUTIONS

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Abstract — The article is dedicated to some development directions of electronic medicine technologies. The increase of requirement for medical information and knowledge resources is substantiated. Some problems of informatization of medicine are analyzed. The ways of solution of some public and social, environmental and psychological problems that appear while using e-medicine technologies are shown and recommendations are given.

Keywords — health reforms, e-medicine, medical innovation, e-medicine technologies, innovative potential.

PROBLEMS OF EVALUATION AND MANAGEMENT OF SUPPLY AND DEMAND FOR MEDICAL PERSONNEL

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Abstract — Paper illustrates distinctive features of medical personnel demand problem, the situation regarding staffing in medical sphere is shown. Staffing and personnel training dynamics in Azerbaijan are analyzed by heath essential indicators. The results of a research concerning the identification of medical informatics staff number and its influence on the demand for medical staff are presented. Together with regulation of demand and supply for medical personnel by means of social surveys, the significance of the development of scientifically grounded approaches and focusing special attention to the training of medical informatics personnel is indicated.

Keywords — medical personnel resources, medical personnel demand, doctor/nurse ratio, average number of medical personnel, medical informatics

TRAINING OF SPECIALISTS IN THE FIELD OF MEDICAL INFORMATICS

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Abstract — This article is about the medical informatics and its fields, about educational programs that prepare new specialists in this field. Further types of medical informatics are described in article and jobs and opportunities in this specialty. The future path of development and the use in the medical field in Azerbaijan will also take place in this article

Keywords — medical informatics, bioinformatics, educational programs, medical system organization, health care industry

MEDICAL COMPUTER TUTORING SYSTEMS AS AN EFFECTIVE TOOL OF LIFELONG EDUCATION

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Abstract — Paper describes the concept of medical tutoring systems development within the framework of lifelong education. The analysis of computer medical tutoring systems existing at the present stage of medical education development is carried out. The classifications of the tutoring programs divided according to their structural, didactic and training functions, foreseen goals and tasks are presented herein.

Keywords — lifelong education, medical tutoring systems, medical personnel training, postgraduate education

SOME ISSUES OF INFORMATION SUPPLY FOR E-MEDICINE

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Abstract — This work is dedicated to the application of information technology in medicine. Information and communication technology services, information processing technology, information processing technology levels, automated work places, electronic clinical documents are interpreted.

Keywords — information technologies; information service; information product; automated work places; electronic clinical documents.

CREATION OF E-MEDICAL LIBRARIES NETWORK

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Abstract — The paper analyzes the creation of e-medical libraries network, problems occur during creation of libraries network and the need of creation of e-medical libraries network and gives information about e-medical libraries in the World and in Azerbaijan.

Keywords — e-medical libraries, PubMed, e-libraries network

STANDARTS APPLIED IN E-MEDICINE

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Abstract — The article analyzes standards existing in the field of medical informatics regulating the use of medical terminology, transmission mechanisms of medical documents and images and free use of medical data for users. Medical Informatics Standards of Medical Informatics as HL7, DICOM, SNOMED, RCC are reviewed.

Keywords — electronic medical records, medical informatics, e-medicine, HL7, DICOM, SNOMED, RCC

MOBILE ON-LINE MEDICAL TECHNOLOGIES

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Abstract — Considered the basic directions of mobile medicine and healthcare market reforms and the information society, such as the position of the revolutionary and social phenomenon. The article presents medical market information and input mechanism of cell phones and their impact on the doctor-patient relationship and prospects for further development of the system. The role of mobile technologies in the solution of the problems of health protection are laid out.

Keywords — medical market, mobile health, mobile medicine, mobile medical devices, mobile technology

MEDICAL KNOWLEDGE ENGINEERING: PROBLEMS OF NATURAL MEDICAL INTELLIGENCE TRANSFORMATION INTO ARTIFICIAL MEDICAL INTELLIGENCE

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Annotation — Paper presents information on the history of knowledge engineeng as a direction of artificial intelligence, and considers problems of knowledge engineering technology application in hardly formalized medical problem solution. Methods and theoretical aspects of knowledge acquisition, knowledge decsription methods are analysed, the functions exsecuted by knowledge engineers in ES establishing process are phased. Singnificance of raising attention to knowledge engineering development, and knowledge engineers training in the light of e-medicine formation and medical ES generating in the Republic is justified.

Keywords — medical expert systems, knowledge engineering, knowledge acquisition,knowledge acquisition aspects, knowledge description methods

THE INTELLECTUAL SYSTEM BASED ON A PERSON'S MEDICAL DIAGNOSIS OF A 3D PHOTO

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Abstract — The article analyzes the specialties in the direction of the use of information and communication technologies in medicine in leading foreign universities of the world. Also addresses the development prospects of these areas with a view to the future.

Keywords — medical informatics, medical electronics, bioengineering and bioinformatics, nanotechnology in medicine, medical robotics, designer implantable organs

THE INTELLECTUAL SYSTEM BASED ON A PERSON'S MEDICAL DIAGNOSIS OF A 3D PHOTO

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Abstract — The paper analyzes existing diagnostic systems based on 3D images. The proposed diagnostic system based on the algorithmic 3D pictures, information and software architecture, the issue of development are noted. Calculation algorithm of face portions at 3-dimensional coordinate system are developed.

Keywords — medical diagnosis, expert system, internal diseases, facial structure, 3D photo

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SESSION III. MEDICAL PROBLEMS OF ICT

THE ROLE OF COMPUTER DEPENDENCE IN SPREADING OF HYPERTENSION AMONG SCHOOL CHILDREN

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Abstract — Researches in Baku secondary schools and children polyclinics showed that increases computer adiction of school children is forming favourable conditions for hypertension. On the base of data gained from present investigation there is a conclusion that not more than 60 minutes work doesn't cause such condition.There fore it is necessary to establish clein time standards use of computer facilities, by schoolchildren and available explanatory work among high school students and parents of rest pupils, the need to comply with these regulations.

Keywords — arterial hypertension, school children, computerization, blood pressure

THE IMPACT PROBLEMS OF INFORMATION ON PUBLIC HEALTH

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Abstract — This article aims to study the problems of information overload as a result of information overabundance and impacts of negative information to health. Meanwhile, information ecology and its research area dealing with pollution problems of information environment are analyzed. In order to adapt to the current information environment the importance of development of information culture are mentioned.

Keywords — information overload, information fatigue syndrome, infomania, information dependence, information ecology, information culture, information stress

HARMFUL EFFECTS OF MEDICAL ELECTRONIC WASTE FOR HUMAN HEALTH AND ENVIRONMENT

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Abstract — The article analyzes harmful effects of electronic medical equipment and its wastes for human health and environment. Harmful effects of sanitary and epidemiological norms and regulative normative documents of potential threats are investigated.

Keywords — wastes,electronic medical wastes,environmental effect,sanitar-epidimological norms,waste management system, waste processing

ROLE OF ICT IN THE INTEGRATION PROCESS OF DISABLED PEOPLE INTO SOCIETY

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Abstract — Paper investigates ways of disabled people integration into society via advanced technologies, and appropriate problem solutions are considered.

Keywords — information and communication technologies, people with disabilities, disability, assistive technologies

CHANGE AND INFORMATION OVERLOAD: NEGATIVE EFFECTS

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Abstract — In the paper overloading people with information and its impact to their lifestyles are analyzed. Recomendations are proposed to reduce the negative impact of information overload.
Keywords — information overload, sensory overload, visual load, future shock

NEGATIVE EFFECTS OF MODERN TECHNOLOGIES TO HEALTH OF CHILDREN AND MECHANISMS AGAINST THEM

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Abstract — In the paper effects of using Internet and modern technologies to physical, moral and psychological health of children are studied. Some diseases arising with influences of computer, mobile phones, and methods for protection against are researched.

Keywords — influences of computer, health of children, psychology of children, mobile phone, tablet.

SOME COMPLICATIONS OF EXTREME USING OF COMPUTER AND WAYS OF PREVENTING THEM

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Abstract – In the article the information about complications of impact of ICT on people's health is generalized and analyzed. The symptoms of vision and tunnel syndromes, hypodynamics and computer addiction are described and some advice about prophylaxis of them is given.

Keywords – vision pathologies, tunnel syndrome, hypodynamics, computer addiction, anti-hypodynamics complex

THE DISEASES CAUSED BY THE IMPACT OF ICT

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Abstract — The medical and psychological damage influenced users' health is investigated in the article while using information and communication. Different ways are interpreted to define prophylactic measures.

Keywords — Health effects of ICT, physical illnesses, electromagnetic radiation, computer damage, computer syndrome

ABOUT DIAGNOSTICS AND PROPHYLAXIS OF INTERNET ADDICTION OF CHILDREN AND TEENAGERS.

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Abstract — In this work characteristics and complications of children's and teenagers' internet addiction are analyzed. The diagnostics, prophylaxis of internet addiction, characteristics of protection of children from this danger are investigated. The current situation on this problem in Azerbaijan is explored.

Keywords — internet addiction, addictology, diagnostics, prophylaxis

ELECTRONIC MEDICINE AND REHABILITATION CHILD NEUROLOGY DISEASES

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Abstract — The article is devoted to the topical issues of e-medicine in rehabilitation child neurological diseases. Children cerebral palsy, speech therapy and attention deficit syndrome was described and trends in the application of information technology in their rehabilitation. Multidisciplinary approach including e-medicine to the treatment of ailments emphasized.

Keywords — information society, e-science, e-medicine, children cerebral palsy, speech therapy, attention deficiency syndrome