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Foreword

Welcome to the Journal of Information Systems & Operations Management (ISSN 1843-4711; IDB indexation: ProQuest, REPEC, QBE, EBSCO, COPERNICUS). This journal is an open access journal published two times a year by the Romanian-American University.

The published articles focus on IT&C and belong to national and international researchers, professors who want to share their results of research, to share ideas, to speak about their expertise and Ph.D. students who want to improve their knowledge, to present their emerging doctoral research.

Being a challenging and a favorable medium for scientific discussions, all the issues of the journal contain articles dealing with current issues from *computer science*, *economics*, *management*, *IT&C*, etc. Furthermore, JISOM encourages the cross-disciplinary research of national and international researchers and welcomes the contributions which give a special "touch and flavor" to the mentioned fields. Each article undergoes a double-blind review from an internationally and nationally recognized pool of reviewers.

JISOM thanks all the authors who contributed to this journal by submitting their work to be published, and also thanks to all reviewers who helped and spared their valuable time in reviewing and evaluating the manuscripts.

Last but not least, JISOM aims at being one of the distinguished journals in the mentioned fields.

Looking forward to receiving your contributions,

Best Wishes

Virgil Chichernea, Ph.D.

Editor-in-Chief

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CONTENTS

VOTING-BASED IMAGE SEGMENTATION

Costin-Anton Boiangiu[1]
Radu Ioanitescu[2]

ABSTRACT

When it comes to image segmentation, there is no single technique that can provide the best possible result for any type of image. Therefore, based on different approaches, numerous algorithms have been developed so far and each has its upsides and downsides, depending on the input data. This paper proposes a voting method that tries to merge different results of some well-known image segmentation algorithms into a relevant output, aimed to be, as frequently as possible, better than any of the independent ones previously computed.

KEYWORDS: image segmentation, machine vision, voting, cluster identification, image processing

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THE IMPORTANCE OF DIGITAL MARKETING. AN EXPLORATORY STUDY TO FIND THE PERCEPTION AND EFFECTIVENESS OF DIGITAL MARKETING AMONGST THE MARKETING PROFESSIONALS IN PAKISTAN

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Professor Dr Kamran Siddiqui[2]

ABSTRACT

The purpose of this exploratory research is to present the perceptions towards Digital Marketing in Pakistan. This issue has rarely been addressed by the academicians and researchers in Pakistan and elsewhere. This study used digital marketing parameters to measure the awareness and effectiveness of digital marketing among marketing professionals in Pakistan. 200 marketing professionals participated in this academic exercise. Data was analyzed in many ways, a) through descriptive statistics b) summarizing the data using factor analysis. Four major perception groups were emerged from the analysis i.e., a) Skeptical b) Enthusiast c) Utilitarian and d) Parsimonious. The result suggests that professionals in Pakistan are more skeptical towards digital marketing tools and concepts. They do not fully understand the benefits of digital marketing in terms of growth and cost effectiveness. Finally, the limitations of the studies and findings are presented in study.

Key words: SEO, Google Analytics, META tags, Blogs

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IMAGE REPRESENTATION USING PHOTONS

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ABSTRACT

Genetic brain maps can help physicians to discover patterns of brain structure and how it changes in disease or reacts to medication. In order to generate a brain map, an image model is needed. A much discussed subject, nowadays, is the subject of improving images obtained from devices like MRI, PET, CT etc. In medical area there is a need to improve image segmentation and image resolution; images might be blurred or might contain noise due to the patient's movement during the process of acquiring them. Imaging studies of the human brain at active medical institutions today routinely accumulate more than 5 terabytes of clinical data per year. The present paper concentrates on neurological field: brain imaging and on genetic field based on the results of the brain imaging. This paper proposes a new medical image format representation, using photons, a tree-like structure in order to improve the inefficiency problem on large medical datasets and an algorithm for eliminating noise from images.

KEYWORDS: Image representation, medical image acquisition, image formats, raster images, vector images, photon images, quad trees, binarization, segmentation, edge detection

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DATABASE DYNAMIC MANAGEMENT PLATFORM (DBDMS) IN OPERATIVE SOFTWARE SYSTEMS

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ABSTRACT

This paper discusses the opportunity of using cloud computing and cloud service features to reliably store and manipulate data and databases. It proposes a platform, the Database Dynamic Managemnt Platform (DBDMS), which can be used to effectively handle database versioning of both schema and data. Opportunities and advantages that this systems brings are discussed here and a mathematical model is presented an analyzed for the proposed platform.

Keywords: cloud computing, cloud storage, dynamic database, schema versioning, data versioning

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TEXT LINE SEGMENTATION IN HANDWRITTEN DOCUMENTS BASED ON DYNAMIC WEIGHTS

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ABSTRACT

Identification of text lines in documents, or text line segmentation, represents the first step in the process called 'Text recognition", whose purpose is to extract the text and put it in a more understandable format. The paper proposes a seam carving algorithm as an approach to find the text lines. This algorithm uses a new method that allocates dynamic weights for every processed pixel in the original image. With this addition, the resulting lines follow the text more accurately. The downside of this technique is the computational time overhead.

KEYWORDS: OCR, text line segmentation, handwritten documents, dynamic weights

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A METHODICAL STUDY OF THE ROLE OF TRUST AT VARIOUS DEVELOPMENT STAGES OF VIRTUAL ORGANIZATIONS

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ABSTRACT

Virtual organization (VO) is an outcome of technological advancements and the introduction of structural flexibilities in organizations. It is a temporary combination of internally independent parties to exploit the emerging market opportunities. The need to demonstrate extra efficiency in its limited life-span, geographical distribution of parties, lack of face-to-face communication, and the absence of complete information about partners working at a distance call for establishing trust-based relationship in virtual organizations. Almost all the researchers agree upon the importance of trust for virtual organization but its nature and role at various development stages of these organizations is still unexplored. Therefore, in this research we have conducted a methodical investigation to propose the models explaining nature and role of trust at various development stages of virtual organizations. The result of this research would help the members to formulate effective trust-based relationship that could ultimately increase the efficiency and performance of virtual organizations.

Key Words: Virtual organization, trust, development stages of virtual organizations

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M-TOURISM EDUCATION FOR FUTURE QUALITY MANAGEMENT

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ABSTRACT

Tourism is the main income source of revenue in GDP in many countries. For 2012 the relative contribution of tourism in GDP in Croatia was 11.9%, in Greece, 6.5% and in Romania was 1.5%. The tourism industry is characterized by high level technology, qualifications of staff and quality management. Increasing the quality and productivity in the industry is achieved through education and certification of workforce. Nowadays due to advanced technologies and permanent lack of time the education is done more and more through mobile device. The characteristics of the processes of education using computer applications based on mobile technologies and security requirements for M-Learning systems are presented. It constructed a metric to determine the behavior of information applications in tourism education.

Keywords: Tourism, Mobile Learning, Quality Management, Security

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HAND GESTURES RECOGNITION USING TIME DELAY NETWORKS

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ABSTRACT

This paper proposes a system for body gestures recognition using the coordinates of the body skeletal returned by a Kinect sensor who are processed in order to compute a set of angles. Gesture recognition is achieved using a Time Delay Neural Network, implemented in two ways: with delay layer, and with delay synapse. The resulting system was trained on a set of gestures, such as: hands up and elbows bent, lifting arms, lowering arms, round, greeting gesture and pointing assertion. Each gesture was repeated at least 5 times with different speed. The accuracy of the proposed method is approximately 80%.

Keywords: gesture recognition, time delay networks, Kinect sensor, intelligent systems;

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CIRCULAR CONVOLUTION AND FOURIER DISCRETE TRANSFORMATION

Mircea Ion Cîrnu[1]

ABSTRACT

We present the discrete circular convolution and its algorithms of calculus. Using discrete Fourier transform can be determined the circular deconvolution, ie the circular convolution inverse. We exemplify these concepts by solving an equation of circular convolution. This type of convolution product is applies to the periodic phenomena, discretely analyzed. By this paper we continue the series of articles about the types of discrete convolution products and their applications, some of which being cited in the References.

Keywords: Circular convolution, circular deconvolution, discrete Fourier transform, circular convolution equations.

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MANAGEMENT OF INNOVATION IN THE MODERN KAZAKHSTAN: DEVELOPMENT PRIORITIES OF SCIENCE, TECHNOLOGY AND INNOVATION

Rauan Danabayeva[1]

ABSTRACT

Kazakhstan's economy has expanded rapidly over the last decade, posting one of the fastest paces of growth in the region. As a country with abundant natural resources The paper analyses the national innovations systems, the institutional framework of innovation policy and the state of science, technology and innovation (STI) in the Republic of Kazakhstan. As a country with abundant natural resources, Kazakhstan is still facing challenges in transforming into a knowledge-based economy. The strategic course of Kazakhstan for industrial-innovative development provides necessary conditions for elaboration and implementation of new scientific ideas and technologies. The strategy of development of Kazakhstan till 2050 together with such documents as the Strategic Development Plan up to 2020, or the State program of Forced Industrial-Innovative Development of Kazakhstan for 2010-2014 provide regular, necessary conditions that support the development of research, technology and innovation in Kazakhstan.

Keywords: innovation policy, industrial-innovative development programm, technology, economic growth, national innovation system.

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2:1 UPSAMPLING-DOWNSAMPLING IMAGE RECONSTRUCTION SYSTEM

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ABSTRACT

In this paper the subject that is considered is an efficient way to send images over an unreliable network link, so that with a small bandwidth, the receiver obtains data at the best quality in an acceptable time. This paper resumes a study that was made, presented in detail, and gives an interesting new view of the process of sending images over the Internet.

KEYWORDS: Image processing, image compression, progressive coding, transfer protocol, image file format

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STUDY OF NEUROBIOLOGICAL IMAGES BASED ON ONTOLOGIES USED IN SUPER-RESOLUTION ALGORITHMS

Andreea-Mihaela Pintilie [1]
Costin-Anton Boiangiu[2]

ABSTRACT

This paper focuses on the applicability of ontologies in medical image processing area. Techniques for automatically describing medical images in a medical language that doctors can operate with are presented. Super resolution algorithms are also highlighted in order to prove their superiority over usual interpolation methods on medical images. At the end, a set of experimental results regarding ontologies are offered.

KEYWORDS: Neurobiological image, medical image, ontology, super resolution

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A FUZZY COGNITIVE MAP FOR HOUSING DOMAIN

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Stănică Justina Lavinia [2]

ABSTRACT

It is well known that local officials in city governments need to develop a comprehensive housing policies to guide their current and future decisions in the context of a specific community that often face different issues. In this paper, the authors propose an original Fuzzy Cognitive Map (FCM) model for housing domain; it analysis the housing decisions and identifies the reasons motivating people's residential choices. The model uses ten variables grouped into three categories. Stakeholders, including the authorities, could exploit the model to make scenarios and use these in order to develop strategies and policies that can lead to the improvement of households' life quality.

Keywords: **fuzzy cognitive map (FCM), simulation, participative decision-making process, housing domain**

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POSSIBILITIES OF DYNAMIC SYSTEMS SIMULATION

Cristina Coculescu[1]

ABSTRACT

Modeling dynamic systems can be made using several instruments and techniques, simulation being among these. Simulation of a system operating, allows evaluation of the kind how it will develop in certain conditions or because its management using a specific set of rules. In many cases, simulation is the only possible solution for making such evaluations. In this work we'll show general considerations about possibilities of simulation dynamic systems using dedicated programs for simulating systems.

Keywords: dynamic system, numerical integration, simulation
JEL code: C6, C88

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HTML5 – AUGMENTED REALITY, A NEW ALLIANCE AGAINST THE OLD WEB EMPIRE?

Alexandru Tăbușcă[1]

ABSTRACT

The current paper presents the 2013 realities of the Augmented Reality paradigm in the context of the use of modern web technologies. The article starts with an educated summary, presentation style, of the present worldwide recognized standards for Augmented Reality (AR) applications. I will not only present but also compare and comment on the current state problems, advantages, development directions and guidelines for AR web applications. The focus of this article is set towards the development and use of AR web applications especially for mobile devices like smartphones, tablets, special factor laptops or ultra-books.

Keywords: html5, augmented reality, canvas, video stream, web extras, qr code

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CASE STUDY ON HIGHLIGHTING QUALITY CHARACTERISTICS OF MAINTAINABLE WEB APPLICATIONS

Gabriel Eugen Garais[1]

ABSTRACT

Building websites require maintenance approach for the design and implementation structures at both logical and physical level. This feature provides to web application maintainability with greater flexibility and significantly increases usability. The life cycle of Web applications is amended by adding the complexity of a maintainable structure. The case study presented highlights the basics of implementing a maintainable structure and represents a quality feature in web applications development.

Keywords: web applications, maintenance, maintainable application

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MANAGING TECHNOLOGICAL CHANGE IN INTERNATIONAL TOURISM BUSINESS

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ABSTRACT

Recent advances in technologies adjust the traditional business model in tourism, and it is expected to create new ones. The question is if companies could understand the benefit from becoming even more innovative and creative when it comes to their „smart" business strategies, in order to fully differentiate these efforts from traditional business operations. Even more, many of the traditional consumers, in the new context of ICTs development, have changed their buying habits and the consumption behaviour. They act different now, they changed the way of interacting with the others and with the business suppliers, and they also became more interested in taking part at the creation process. But are these the essential characteristics of the next generation tourists?

Going further, the infrastructure of the organization determines the readiness to respond to customer requirements. The new trends affect not only the shape of the offer, but also the design of the demand. As a consequence, customer relationship management and other fundamental information management systems are essential for businesses to scale-up.

In that respect, the discussions on this topics will enable an overview of the present status of the field and also it aims extending the methodological insights regarding the appropriate approaches and responses of tourism suppliers to the new technological changes.

Keywords: tourism, technology, digital tourists, ICT, smart business, change

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VERIFIABLE SECRET SHARING SCHEME BASED ON INTEGER REPRESENTATION

Qassim Al Mahmoud[1]

ABSTRACT

In Shamir's scheme that the security based on the numbers of the field of a prime number P which the coefficients' polynomial reduced to modulo P (takes a value from some field Z_P *, where P is a large prime number). Thus, the adversary must know only the free coefficient of the polynomial in order to break the scheme. Our scheme which based on representation integer using the so-called* $g-adic$ *expansion we can see any integer* a *can build such polynomial so that the polynomial has degree of k, k being the length digits for that integer* a *. Where the coefficients of that polynomial are taken from the set of* $\{0,1,...,g-1\}^k$ *, we will introduce a small participation improving Shamir's scheme to share the secret S that will be seen constructed from the whole of the coefficients in the polynomial used, which is based on the representation integer. Then apply Pederson's VSS scheme in order to improve our scheme to be Verifiable Secret Sharing Scheme Based on Integer Representation.*

Keywords: Shamir scheme, information dispersal, integer representation, verifiable secret sharing (VSS), $g-adic$

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THE IMPACT OF 3D PRINTING TECHNOLOGY ON THE SOCIETY AND ECONOMY

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ABSTRACT

In this paper, we analyse the evolution of 3D printing technology, its applications and numerous social, economic, geopolitical, security and environmental consequences. We compare some of the most significant existing 3D printing solutions, taking into account the acquisition price, the technical specifications, their main advantages and limitations. Just as it happened in the past decades with the personal computers and Internet, the impact of 3-D printing will gradually increase in the future, leading to significant transformations, redefining our everyday life, economy and society.

Keywords: 3-D printing technology, costs, impact.

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CONSIDERATIONS REGARDING THE INTERNET PURCHASES BY INDIVIDUALS IN ROMANIA AND EUROPE

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ABSTRACT

Internet and E-commerce have witnessed a continuous development in recent decades, the share of individuals who use this method to purchase goods and services in some countries in Europe reaching values exceeding 60 percent of the total population (Norway 71%, United Kingdom 67 %, the Netherlands and Sweden 66%). Moreover, in some age groups this percentage, exceeding 80 percent. Unfortunately, in terms of Internet use by individuals in Romania for making internet purchases barely exceeds 5 percent. From this viewpoint we are detached in last place in the EU. Based on an analysis of the evolution of the percentage of individuals from EU countries who make Internet purchases, this paper presents situation in Romania, compared to 10 European countries, of percentage of Internet purchases by individuals in the last three month and in the last year.

Key words: Romania, E-Commerce, internet purchases

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AN OVERVIEW OF DOCUMENT IMAGE ANALYSIS SYSTEMS

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ABSTRACT

This paper presents an overview of Document Image Analysis Systems, their composing modules, the approaches these modules use, as well as uses for these applications. One of the main goals is to present some of the most important technologies and methods behind the Document Image Analysis domain in order to evaluate the best approach when dealing with real-world documents. The other main goal is to ensure a foundation for those starting to build such complex software systems and to give an elaborate technical answer to the question: "How to make physical documents available to a large number of people?"

Keywords: Document image analysis, character recognition, OCR, image data extraction, image export

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ASSISTIVE I.T. FOR VISUALLY IMPAIRED PEOPLE

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Victor Asavei

ABSTRACT

According to an international survey performed by the World Health Organization, it was estimated that the number of visually impaired people in the year 2002 rose to about 161 million (2.6% of the world's population). Therefore, a large number of people are suffering from a visual handicap which impedes them from normally accomplishing their daily activities. As a result, there is need for an assistive device based on an alternative modality, that can complement or replace sight by another sense -auditory, haptic (tactile or kinesthetic) [13], or a combination of both- and that can offer a means to deal with blindness.

Rapid progress is ongoing in various fields of medicine, as advances in computer technology are enhancing extended development and evolution in simulation, visualization and virtual reality systems. As a result, a convenient approach is the use of augmented reality for the development of assistive devices for visually-handicapped people.

This paper presents the current state of research in the field of virtual reality and six assistive devices for visually-impaired people, the technology engaged to provide effective and reliable benefits and some of the most interesting and innovative applications in the area of rehabilitation techniques based on another senses.

***Keywords*—sensory substitution, assistive IT, virtual reality, augmented reality**

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PROJECT MANAGEMENT DATA IN INNOVATION ORIENTED SOFTWARE DEVELOPMENT

Mihai Liviu Despa[1]

ABSTRACT

The focus of this article is on project management data acquisition, analysis, processing and classification in the context of innovation oriented software development. The role played by data in the decision-making process is highlighted. Main data categories, specific to IT project management, are depicted. Data sources are described and analyzed. Data collection process specific to software development project management is formalized into a diagram. Data sorting and grading methods are submitted by offering practical examples from the author's own activity. Software tools for data management are indicated. Methods of data analysis are presented. An indicator for data consistency is introduced. Key characteristics of the indicator are submitted for analysis. Future research opportunities regarding data management are suggested.

Keywords: project management, data, software development, innovation

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MODELING AND OPTIMIZING THE BUSINESS PROCESSES USING MICROSOFT OFFICE EXCEL

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ABSTRACT

Business process management *is a management approach based on aligning all the company's activities along with the customers' needs and wishes. It is a method that promotes the company's efficiency, but in the same time leaves an open place to the innovation, flexibility and integration with other software applications. Business process modeling is trying to continuously improve the work processes within a company. Business process modeling helps the companies to be more efficient and more able to change than the companies that are based on a traditional hierarchical management.*

Key words: modeling, simulation, optimization, business, Excel

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A COMPARISON OF SOME NEW METHODS FOR SOLVING ALGEBRAIC EQUATIONS

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Mircea Ion Cîrnu[2]

ABSTRACT

In this paper we compare different methods of solving algebraic equations based on resolvent polynomial equations. These methods were considered by several authors, including the second author of this article. Due to the fact that no demonstration of convergence was made for these methods and therefore the speed of convergence was not determined, this study offers some important data in terms of effectiveness.

Mathematics Subject Classification: 65H05, 41A25
Keywords: algebraic equation, Iteration method, resolvent polynomial equation, Taylor expansion

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CHOOSING THE RIGHT CLOUD COMPUTING SOLUTION FOR YOU

Dan Smedescu[1]

ABSTRACT

This article provides an introduction to cloud computing and choosing a vendor. The first part includes definitions and service models while the body of the article lists pros and cons for specific service models and discusses the cost efficiency of implementing a cloud computing solution. In the last part, a general overview of cloud computing advantages and disadvantages further helps to inform the reader of opportunities and pitfalls.

Keywords: cloud computing, cloud computing models, cloud computing advantages and disadvantages

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