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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

# JOURNAL OF INFORMATION SYSTEMS & OPERATIONS MANAGEMENT

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## THE IMPORTANCE OF PROJECT MANAGEMENT SOFTWARE AND SYSTEMS ENGINEERING IN MEGA PROJECTS

JAMES K. MCCOLLUM<sup>1</sup>

### ABSTRACT

*The management specialty now commonly known as “Project Management” was hardly recognized before World War II. Since then, many techniques have been added to the Project Manager’s repertoire which are necessary for successful results when undertaking very large, complex projects such as costly construction projects or complex weapons systems design. These projects are made more difficult when more than one organization is assigned to complete parts of the project. Techniques such as network scheduling using project software and systems engineering are helpful, but are not always successful in obtaining the desired results.*

## RESOURCES ALLOCATION – CAUSAL PROCESS ANALYSIS

DRAGOS CAZACU<sup>2</sup>

### ABSTRACT:

*This Paper is built around a Case Study based on Causal Process Analytics to describe the Causal Interdependence between two of the most used variables of a Management Process, the Resource Allocation and its Destination, emphasizing how the two variables are influencing causally one another and how is possible to allocate more efficient Resources using Causal Process Analytics.*

*The topic is focusing on a completely new approach, with the help of new developed Causal Analytics, on how to distribute Resources during an Industrial or Investment Process in practice and what benefits and challenges, using the presented Case Implementing, might appear.*

**KEYWORDS:** *Causal Processes, Cause and Effect States, Cause and Effect Phases, Causal Objective, Causal Synchronicity Degree, Causal Correlation Degree, Causal Structure Degree, Causality Degree*

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**A SURVEY OF THE ACCOUNTING INFORMATION SYSTEMS USED BY THE BANKING INDUSTRY IN ALBANIA**

**Rezarta SHKURTI (PERRI) <sup>1\*</sup>**  
**Endri MADHI <sup>2</sup>**

**ABSTRACT**

*During the last two decades the banking and financial industry in Albania has undergone a major revolution regarding the products it offers as well as its organization and competitiveness. During the same period there has been an immense development of the information and communication technology in the banking industry and consequently an increase in the use of advanced information systems in the collection and processing of financial information by these institutions. Also, the globalization of the markets has increased the need to process the information faster and more efficiently, not only for a prompt decision making, but also to comply to financial supervision requirements and to better understand the market situation. In this paper we analyze how the information systems used by the banks in Albania impact their activities and daily operations. We use a survey to conduct an analysis of strategy matrix of McFarlan and how the banks of Albania position themselves in this matrix. We find out that all the surveyed banks view their information systems as strategic tools through which they adjust their market positioning to gain strategic advantage and product differentiation. The dependency on the information systems is considerably high and it is expected to increase in the near future as the investments for the systems are also expected to increase.*

**KEYWORDS:** *bank information system, strategy matrix of McFarlan*

*JEL Classification Code: M41*

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## MODELING OF URBAN POLICIES FOR HOUSING WITH FUZZY COGNITIVE MAP METHODOLOGY

MARILENA - AURA DIN <sup>1\*</sup>  
CRISTINA COCULESCU <sup>2</sup>

### ABSTRACT

*Considering the increasingly dynamic and complex reality of the different urban policies, arose the question of whether these policies should be better designed in accordance with the causal knowledge in the respective policy area. One of the current approaches in urban policy modelling is the Fuzzy Cognitive Maps (FCM) methodology, which is capable to capture and to represent complex relationships in an intuitive manner and to represent the causality and the propagation of causality in the dynamic systems.*

*The purpose of this paper is to illustrate how the FCM methodology is useful for a cognitive modeling to various urban policies in the field of the housing and how the FCM can become a useful tool in the design of participatory urban policies based on the most important determinant factors (controllable, observable and influence variables) perceived by participants in the policy (citizens, city officers, experts in the field, etc.).*

**KEYWORDS:** *Housing policy modelling, simulating scenarios, Fuzzy Cognitive Maps (FCM).*

**JEL code:** C6

## METALLIC COIN ANALYZER SYSTEM FOR AUTOMATIC IDENTIFICATION AND CLASSIFICATION

STEFAN NICOLAE TICA <sup>3\*</sup>  
COSTIN-ANTON BOIANGIU <sup>4</sup>  
ION BUCUR <sup>5</sup>

### ABSTRACT

*In this paper, we would like to present and discuss a system that automatically classifies coins. This flexible system can identify coins having different features and being photographed in different light conditions. For this purpose, a set of strong techniques for thresholding, edge detection and frequency transform were used in order to generate a fingerprint as meaningful and as invariant as possible for every coin class. Usually, the*

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*capturing of digital images cannot be performed in best conditions and inconsistencies can arise due to various lighting conditions as well as the performance of the capturing device. This article is here to suggest a method to reduce problems generated by lighting, so that image characteristics are more accurate. The proposed solution improves an existing automatic coin classification algorithm by applying illumination correction before the actual classification.*

**Keywords:** *Canny edge detection, coin classification, DCT transform, lighting invariant, Otsu thresholding, rotation invariant.*

## **EU OPPORTUNITIES FOR ICT RESEARCH AND INNOVATION IN HORIZON 2020 FOR 2016-2017**

**VICTORIA FOLEA <sup>1\*</sup>**

### **ABSTRACT**

*Information and communication technologies (ICT) play an important role by contributing to rapid technological progress and productivity growth. The ICT sector represents 4.8% of the European economy. It generates 25% of total business expenditure in Research and Development (R&D), and investments in ICT account for 50% of all European productivity growth. It is therefore obvious that ICT lies at the heart of research and innovation globally. The European Union considers that ICT have a catalytic impact in three key areas: productivity and innovation, by facilitating creativity and management; modernisation of public services, such as health, education and transport; and advances in science and technology, by supporting cooperation and access to information.*

*Horizon 2020 is the European Union framework programme for research and innovation for 2014-2020. EU investments in ICT increased by about 25% under Horizon 2020 compared to the previous EU framework programme for research, FP7. This EU investment supports the whole chain from basic research to innovation that can deliver new business breakthroughs, often on the basis of emerging technologies. In Horizon 2020, ICT-related topics can be found in all priorities and programmes.*

*The overall structure of the Work Programme for Information and Communication Technologies 2016-2017 is very similar to the one of 2014-2015, however, a few changes were made, namely: Activities aiming at supporting innovative SMEs of the ICT sector through the dedicated SME instrument are grouped together with similar activities addressing other scientific and technical fields in a single call of the 'Innovation in SMEs' part of Horizon 2020; 'Cross-cutting activities' combining contributions from the 'Leadership in enabling and industrial technologies' priority and 'Societal Challenges' are also grouped together in a specific part of Horizon 2020.*

**KEYWORDS:** Information and Communication Technologies; ICT; Horizon 2020

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## HUMAN BODY POSTURE RECOGNITION USING A KINECT SENSOR

CATALINA MOCANU <sup>1\*</sup>

IRINA MOCANU <sup>2</sup>

### ABSTRACT

*This paper presents a new hierarchical approach used for human body posture recognition based on histograms of angles and voting schemes. Our approach uses the 3D skeleton information from a Kinect sensor to compute features for classification that are represented by the angles between different body parts. The posture recognition is performed in two steps: first the major posture is obtained (defined by the lower limbs' position) using a two voting scheme process and after that the minor posture is computed (defined by the upper limbs' position) that is performed using a weighted sum of the votes from the involved features.*

## SKILLS AND ABILITIES ENHANCED THROUGH SIMULATED ENTERPRISE

ELENA MOISE <sup>3\*</sup>

CRISTINA COCULESCU <sup>4</sup>

GEORGE CĂRUȚAȘU <sup>5</sup>

### ABSTRACT

*In this paper we present some of the results of the approach taken to develop the methodology for establishing and running a business providing interactive simulation as a method of learning. In this paper we present theoretical and practical aspects of the conditions and implementation methodology concept of "simulated enterprise" in the educational process.*

*Involving students in the simulation of economic activities, allows the implementation of theoretical knowledge acquired during the study, development of entrepreneurial skills, develop the spirit of competitiveness and teamwork, and accountability and decision-making risk. The operational modalities and valuation used, simulated enterprise creates*

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*the necessary enhancing by students of skills that will help them later for a quick and effective insertion in the labor market.*

**KEYWORD:** education, skills, abilities, simulated enterprise

**JEL code:** A2, C7, D1, D2

## **EXPERT SYSTEMS FOR AUTOMOTIVE SAFETY**

**IACOB IONEL** <sup>1\*</sup>  
**MIHĂLCESCU CEZAR** <sup>2</sup>

### **ABSTRACT**

*To ensure your safety and those around you means to behave responsibly, always to drive defensively and to invest in vehicle safety technologies. Automotive Safety consists of vehicle equipment like airbag or seatbelts and driver assistance technologies.*

*Safety has become a leitmotif in the XXI century, and researchers are constantly investigating ways to reduce the risk factors to which we are exposed on public roads. Advanced Driver Assistance Systems are based on expert knowledge and are implemented on vehicles. They use information from traffic, cameras, sensors and respond in real time contingency occurring while driving. Although expert systems work faster than human, sometimes only the driver reflexes can save the day because "It's not the speed that kills. It's the sudden stop!".*

**KEYWORDS:** *expert system, safety device, optimization, innovative technologies.*

## **A SURVEY ON DOCUMENT IMAGE SKEW DETECTION**

**MIHAI ZAHARESCU** <sup>3\*</sup>  
**COSTIN-ANTON BOIANGIU** <sup>4</sup>  
**ION BUCUR** <sup>5</sup>

### **ABSTRACT**

*This paper addresses the research area of Document Image Skew Detection and*

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*Correction. The problem is of critical importance in the automated content conversion systems domain, making libraries digitalization projects possible. The paper at hand consists in a comparison between the main types of skew detection algorithms and presents the reader with a study on their advantages and disadvantages, as well as proposed improvements.*

**Keywords:** *Skew detection, deskew, automatic content conversion, Hough transform,*

## **STATISTICAL COMPUTER SIMULATIONS AND MONTE CARLO METHODS**

**SANDA MICULA** <sup>1\*</sup>

### **ABSTRACT**

*In this paper we present Monte Carlo methods for estimating distribution characteristics of random variables. We describe algorithms for computer simulations of some common distributions and their implementation in MATLAB. The paper concludes with examples and applications.*

AMS Subject Classification: 60E05, 60G25, 60G99, 60J10, 62P99, 65C05, 65C60.

**KEYWORDS:** *Monte Carlo methods, random variables, random number generators, computer simulations, MATLAB.*

## **F.A.Q ON HOW TO PUBLISH RELEVANT CONTENT ON SEO WEB PAGES**

**GABRIEL EUGEN GARAIS** <sup>2\*</sup>

### **ABSTRACT**

*There has to be no differentiation between how a programmer or a non-programmer writes content over the Internet. This article presents the most important F.A.Q. that someone who publishes content over Internet must understand. The answers for the F.A.Q must be acknowledged and followed as actual rules in order to write relevant content by best describing a subject that worth's writing about on WWW.*

**KEYWORDS:** *Relevant Content, SEO, HTML, shared vocabularies, Social Media*

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## SEEING WITHOUT EYES: VISUAL SENSORY SUBSTITUTION

DRAGOS MORARU <sup>1\*</sup>  
COSTIN-ANTON BOIANGIU <sup>2</sup>

### ABSTRACT

*This paper investigates techniques that can be used by people with visual deficit in order to improve their life quality. The techniques covered span from technologies developed more than 3 decades ago, but forgotten by time and extremely powerful, to new computer aided sense substitution systems that manage to transmit as much as possible of the highly data intensive visual sense through the more limited senses, like the auditory or tactile. The usage possibility ranges from very simple to use PC and webcam instruments to hi-tech implants inserted directly on the brain.*

**KEYWORDS:** *sensory substitution, visual prosthesis, visual to sound, blindness, neuroplasticity, medicine, technology*

## THE DEVELOPMENT OF NEW ONLINE BUSINESS MODELS IN ROMANIAN RURAL TOURISM

MIHĂLCESCU CEZAR<sup>3</sup>  
SION BEATRICE<sup>4</sup>  
MĂRGINEAN ALEXANDRA<sup>5</sup>

### ABSTRACT

*This paper analyzes the current situation of online businesses in Romanian agro tourism, as well as the perspectives it holds through the use of online business models. The tourism sector brings along important revenue, both at the global and at the local levels. This entails great opportunities for the economic development of Romania through an increase in GDP, the development of Romanian areas for a growth in the income of people who get a job through a rise in the number of tourist arrivals. It is well known that a lot of tourism policies developed by governments without any involvement at the local level did not manage to meet the sensitivities and aspirations of tourists prospected for the respective areas.*

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*Hence, based on studies conducted by researchers in specialized papers, made by expert institutions as well as the interviewing of a group of students, we may draw the conclusion that the online environment is fully expanding in Romania, but also that it is, nevertheless, at an incipient stage; online businesses in the field of agro tourism have developed considerably during the past few years and an exponential growth is forecast in the following years as well. If this ascending trend is maintained, Romania will be on the map of favorite destinations of the Europeans, due to its landscapes, traditions, customs, the hospitality of its people and the small prices.*

**KEYWORDS:** business models, social media, online environment, agritourism, Romania

### **EDUCATIONAL ROBOTS**

**GABRIELA BAJENARU** <sup>1\*</sup>

**ILEANA VUCICOVICI** <sup>2</sup>

**HOREA CARAMIZARU** <sup>3</sup>

**GABRIEL IONESCU** <sup>4</sup>

**COSTIN-ANTON BOIANGIU** <sup>5</sup>

### **ABSTRACT**

*This paper describes a prototype designed to automate the movement of a robot among some objects with certain features. It is a first step in the possible development of an education robot - a platform on which students will work to develop more advanced methods for automatic guidance systems for a car in traffic, the detection and recognition of important objects (signs, both on the boards and on the road, traffic lights, pedestrians, other cars, etc.) and decisions based on the significance of objects and their position. The benefit is that they work with a real robot, and not a simulation, many of the necessary modules being already implemented and ready to use.*

**KEYWORDS:** education, robot, computer vision, object detection, cascade training, cascade classifier

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## CONSIDERATIONS REGARDING RECOGNIZING AND EVALUATING LOSSES FROM DEPRECIATION OF FIXED ASSETS

ALICE ȚÎNȚĂ<sup>1\*</sup>

### ABSTRACT:

*Fixed assets are subject to declines in certain periods when the carrying amount of the inventory value is settled to a lower value provided by accounting. Impairment of intangible assets, tangible assets, tangible assets in progress and of financial ones, is established on financial expenses, at the end of a financial year when doing inventory and it increases, decreases or is cancelled in the next financial year.*

**KEYWORDS:** *fixed assets, depreciation, book value, fair value, inventory value, adjustments for depreciation, International Standards for Financial Reporting.*

**JEL classifications:** M40, M41

## THE FAITHFUL IMAGE AND FAIR VALUE- MAIN OBJECTIVES IN INSSURING TRANSPARENCY OF THE FINANCIAL AND ACCOUNTING INFORMATION

MARILENA-ROXANA ZUCA<sup>2</sup>

### ABSTRACT:

*The main concern of IASB and FASB is to create a modern system that informs quickly and honestly the users of financial and accounting information, as well as an active concept in order to give an objective image on an economic entity as a whole.*

*The Romanian economy needs a similar image, a real and an objective one that supplies honest information, the basis for decisions leading to adopting a strategy according to the economic truth at all its levels. An important position in making financial statements is the concept of **faithful image** that supplies the necessary security and prestige. The faithful image concept is tightly linked to the concept of **fair value**, both being in continuous movement and influencing each other.*

**KEYWORDS:** *IASB, FASB, accounting system, faithful image, fair value, financial statements.*

**Code JEL:** M41

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## ULTRASYMMETRY OF VALUATIONS IN TRANSCENDENTAL VALUED FIELDS EXTENSIONS

CĂTĂLINA VIȘAN<sup>1\*</sup>

### ABSTRACT:

*Transcendental valued field extensions became an important, but also difficult, area of research lately, due to the complexity of the analysis and characterization of the extensions of their valuations, from  $K$  to  $K(X_1, \dots, X_n)$ , when the transcendental degree is larger than 1. One promising approach introduced the concept of symmetric extensions with respect to the indeterminates  $X_1, \dots, X_n$ , that allowed having a closer look inside the structure of an extension of a valuation from  $K$  to  $K(X_1, \dots, X_n)$ . While these symmetric valuations have been analyzed up to a significant level of detail, a sub-class of them, namely the ultrasymmetric extensions are still an unexplored territory. This paper deals with the investigation of this domain of ultrasymmetric extensions, with the purpose of identifying their form and characteristics.*

**KEYWORDS:** commutative algebra, valued fields, valuations, extensions, symmetry, ultrasymmetry

**Mathematics Subject Classification:** 12F20, 12J10, 13A18

## PRESENT AND FUTURE ECONOMICS OF AUGMENTED REALITY

TĂBUȘCĂ ALEXANDRU<sup>2\*</sup>

### ABSTRACT:

*The present paper aims to address the 2015 realities of the Augmented Reality environment, from both technological and economical point of view. The paper introduces the issue of AR through a concise historical background, follows with a number of AR practical applications found in day to day business strategies, goes through the financial figures of the AR environment for the last couple of years and finishes with several predictions and considerations on the topics of AR use and monetization. As the main practical result, the paper will also present a fast and easy solution for digitization of real*

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*objects into 3D models, usable as definable object within an Augmented Reality application.*

**KEYWORDS:** *AR, 3D, digitization, augmented reality, monetization*

## **MODULAR SOFTWARE ARCHITECTURE FOR AUTHORING MATHEMATICAL CONTENT**

**STĂNICĂ JUSTINA LAVINIA** <sup>1\*</sup>

### **ABSTRACT:**

*The present paper intends to highlight the advantages of choosing a modular architecture in the development of a software platform for teaching math. The software mostly focused on implementing the mathematical functionalities related to an important math concept – functions. Therefore, three main independent components were developed: an equation editor, a mathematical compiler, and a graph plotter. Each component was implemented through an independent user control. The idea behind this was to have a high degree of independence, but yet to assure that the components can work together in order to create a coherent mathematical lesson.*

**KEYWORDS:** *e-Learning, learning component, modular architecture, mathematical compiler*

### **THE RELATION BETWEEN ENTREPRENEURSHIP AND SMART ECONOMY.**

**CRISTINA BALACEANU** <sup>2\*</sup>

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**ABSTRACT:**

*Entrepreneurship is a catalyst for the economy, both in terms of capital inflows and the perspective of sustainable development. To promote entrepreneurship, both aspects of logistic- base infrastructure, finance, investment process- and socialistic - multiculturalism, cultural heterogeneity, linguistic, religious- is an efficient and sustainable method to satisfy needs and development by exploiting local opportunities to present them as a way of life, adapted to the requirements and consumer demands. These aspects imply production, allotment and marginal distribution generated by the market and/or the dynamics of resources.*

**KEY WORDS:** *economic development, development, economic growth, equity, growth, sustainability*

**JEL Classification:** O1, O15, O47

**SOLUTIONS FOR DATA BINDING AND PROGRAMMATICALLY MANAGING RIBBON CONTROL OBJECTS BY DEVELOPING CUSTOM TASK PANES THAT INCORPORATE LANGUAGE-INTEGRATED QUERY (LINQ) INSTRUCTIONS**

**ALEXANDRU PÎRJAN<sup>1\*</sup>  
DANA-MIHAELA PETROȘANU<sup>2</sup>**

**ABSTRACT:**

*Within this research, we have developed a series of solutions for data binding ribbon control objects and manipulating data sources by developing and integrating custom task panes that incorporate Language-Integrated Query (LINQ) instructions within the Office 2013 suite by using the development environment Visual Studio Tools for Office (VSTO) 2013. The solutions are designed to automate the activities carried out within office computer based information systems, by extending the default functionality of the Office 2013 suite, through the development of Component Object Model Add-Ins.*

**KEYWORDS:** *VSTO 2013, COM Add-Ins, LINQ, ribbon control, Custom Task Panes.*

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