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Faculty of Economy, University of Tirana**

in collaboration with
**Academy of Sciences of Albania
University for Business and Technology, Kosovo**

**7th INTERNATIONAL CONFERENCE
“Information Systems
and Technology Innovations:
the New Paradigm for a Smarter Economy”**

Proceedings Book

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“Information Systems and Technology Innovations: the New Paradigm for a Smarter Economy”***Proceedings Book***

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To the reader...

The seventh International Conference, entitled **"Information Systems and Technology Innovations: the New Paradigm for a Smarter Economy"**, and organized by the Department of Statistics and Applied Informatics, Faculty of Economy, University of Tirana, was built upon the success of the past conferences. This conference has consistently aimed to strengthen and expand further the network of collaboration between the national and international academic institutions, and also the companies in the IT sector, government agencies and other main stakeholders in the IT environment.

Past conferences have always been focused in recent trends of technology and innovations, offering an important contribution to all the actors involved in this environment. In this context, our main topic of ISTI 2016 is Smart Economy, which represents the intersection between the economy, information technology and Smart Cities. Thus, primary goal of ISTI 2016 is mainly oriented to how a Smart City can be used as a substantial economic driver. Exploring new paths and translating them into added value for the environment and our society in general is one of the main goals of the technologies and services created as part of the Smart Economy.

In this conference there are approximately 240 authors from different countries of the region and beyond, including Sweden, Norway, Austria, Italy, Luxembourg, France, Kosovo, Macedonia, Serbia, Turkey, etc. The main topics include Information Systems, Information Security, Engineering and Networks, Cloud Computing and Mobile Networks, Modelling, Simulation and Big data, Smart Economy and other related topics.

The consistent devotion shown from the Department members, from the Conference participants and especially from our guests of honor have certainly given an added value to this Conference.

I am also thankful to the Albanian Academy of Sciences and the University for Business and Technology in Kosovo for their unconditional support.

I feel highly appreciated and would also like to express my deepest gratitude to our Conference sponsors that have supported this event. Among them, allow me to thank especially Spike associates, BNT Electronics, the Plaza Hotel, Commit, Blueberry, and Kreatx for their collaboration and the support offered to us.

Finally, the special credits go to the organizing team and to the students of Economic Informatics for their continuous help and commitment shown during the Conference.

Thank you to everyone!

Prof. Dr. Kozeta SEVRANI



Head of the Department of Statistics and Applied Informatics

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Physio-digital Convergence – Aspects on Security

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Abstract

The fast progressing development of mobile technologies and health applications has given rise to trends like health tracking and quantify self. This kind of mobile health applications can measure an increasing amount of physiological parameters, which implies an increasing interconnectivity between users and mobile technologies. An explorative pre-study was made which studied the relation between users and mobile technologies on students in Sweden and Albania. The results imply an increasing interconnectivity between users and mobile technologies and this can be considered as both a physical and psychological phenomenon. From a system perspective the physiological and digital systems can be seen as converging, driven by both technical innovations and user behavior. This blurring of system boundaries requires for reflections within philosophy and ethics as well as security and integrity. The concept of Physio-digital convergence is proposed as a perspective to further analyze this development. Recommendations on further research include integrity and security issues, which are both pointed out as critical aspects in this context.

Keywords: *Mobile technologies; health information; convergence; security; integrity*

My ZETTERHOLM has a background within the Social sciences with a bachelor in Human Geography. She recently finished her masters thesis in Informatics at the Linnaeus University. Her masters education is focused on eHealth, and involves Informatics and Public Health/ Health sciences. She has worked at the Linnaeus university since 2012, starting at the eHealth institute (Dep. of Medicine and Optometry) and later at the Department of Informatics. Her research interest is within eHealth, focused on mobile solutions used in a health/ medical context.

Patrik BRANDT received his PhD in 2007 at Blekinge Institute of Technology. His skills and expertise is related to information quality in the context of information flows in organizations, in particular from the technical perspective and including information security concerns. His research and teaching is founded on the global growth of the service sector and its significance for society as a whole and for the individual human being. He has extensive experience in developing courses and teaching material for blended learning. Currently he is assistant professor in Computer Science and Head of the Department of Informatics at the Linnaeus University.

***Päivi JOKELA** received her PhD in Physical Chemistry in 1987 and she is associate professor in informatics at Linnaeus University since 2012. In informatics her special interest is interdisciplinary teaching and action research including development of sustainable learning environments for flexible and blended learning in higher education with focus on innovative design, modeling and delivery of educational service systems. What is more, evaluation models and methodology in higher education and the health sector are part of her expertise. Currently she is associate professor in Informatics and Head of the Department of Chemistry and Biomedical sciences.*

Evolution and recent technologies of biometric template protection schemes

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Abstract

Biometric systems are continuously prone to different security breaches and attacks. Recognition processes are accompanied by threats, which may lead to unauthorized intrusion and data theft, causing user impersonation, sabotage and other malicious activities. In a broad sense, system security breaches such as data observation, incorrect data modification and data unavailability, refer even to these systems and their stored biometric data improper use may be detrimental for the system. Our human physiological or behavioral characteristics are limited, and they cannot be updated as frequently as e.g. passwords. For these reasons the academic community has always tried to find as strong as possible protection schemes for the most important piece of information of a biometric system: the template. In this paper we have conducted a study on how template protection schemes have evolved, and what are the recent trends. Given the large number of sources and publications in this area, we focused our search in two main sources DBLP, and IEEEExplore, including journal and conference papers published from 2010.

Keywords: *biometric systems, template protection scheme, information security, survey*

***Edlira MARTIRI** holds a Doctor Degree in Information Systems with topic in Image Information Systems data protection, and is Associate Professor at University of Tirana, Albania. She is affiliated with the department of Statistics and Applied Informatics at the same university, and a research fellow at NTNU, Norway (department of Information Security, IMT). Being part of the Norwegian Biometrics*

Laboratory, her work is focused in designing new and robust biometric template protection schemes. Mrs. Martiri has an intensive experience in the field of IT and Information Security in particular. She is member of the Research School of Computer and Information Security, Center for Cyber and Information Security, in Norway, and from January 2014 she serves as a National Contact Point for Albania at the European Association of Biometrics (www.eab.org).

A deceptive access control mechanism for sensitive-content databases

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Abstract

Information security, especially access control, in data storage has always attracted system designers' intention. There is also another interested counterpart: intruders, attackers, malicious insiders, who seek to gain access to these data. The more sensitive they are, the more perspicacious becomes "the cold war" between the two parties. In this paper we propose an access control mechanism intended to track and register actions (i.e. read, write, copy, cut, execute) on a sensitive-content database, in order to provide a system administrator unauthorized attempts to data access.

In particular our focus will be biometric templates database security which is an important storage because, unlike passwords and tokens, compromised biometric templates cannot be revoked and re-issued. The solution we propose will provide an extra layer of security applied in the Operative System (OS) level. The main advantage of this access control mechanism is that each time an unauthorized command is detected from the OS, the content of data will be changed, without the attacker noticing it and providing him/her a randomly generated template.

Keywords: *information security, operating system, access control, biometric templates, database security*

Klaidi GORISHTI is a Bachelor student of Business Informatics branch in the Faculty of Economy, University of Tirana. Actually, he is finishing the third year on this branch. He is a prospective student of Technical University of Munich, as he will study there a Master program in the field of Computer Science. Actually, he is working with security systems for biometric templates' databases.

Edlira MARTIRI holds a Doctor Degree in Information Systems with topic in Image Information Systems data protection, and is Associate Professor at University of Tirana, Albania. She is affiliated with the department of Statistics and

Applied Informatics at the same university, and a research fellow at NTNU, Norway (department of Information Security, IMT). Being part of the Norwegian Biometrics Laboratory, her work is focused in designing new and robust biometric template protection schemes. Mrs. Martiri has an intensive experience in the field of IT and Information Security in particular. She is member of the Research School of Computer and Information Security, Center for Cyber and Information Security, in Norway, and from January 2014 she serves as a National Contact Point for Albania at the European Association of Biometrics (www.eab.org).

The El – Gamal enhancement (El – Gamal E-1)

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Abstract

El- Gmamal is one of classic public cryptosystems well known which security depends on discrete logarithm problem. In this paper, it is presented a way to increase the security of the system getting so a first enhancement of El – Gamal (El-Gamal E-1). The aim of this work is to add another security level. The El-Gamal E-1 security is not only depended on discrete logarithm problem, but also in the difficulty of prime number factorization like RSA and EMO – 1.

Keywords: *El – Gamal E-1, security, discret logarithm problem, prime number factorization, etc.*

Review on Cybersecurity Laws and Regulations in Albania

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Abstract

Nowadays, technology is part of the majority of businesses and individual activities. The rapid growth of technology usage and especially internet usage is related not only with positive effects but also with the increase of threats against information systems. As every new situation with rapid progress, it creates the opportunity not to be only a bad surprise for the business but also for the legal institutions. While the EU is preparing a strong legal framework using NIS directives to be implemented in two consequent

years, we will try to identify the existing laws and regulations in Albania that provide a reference for companies and institutions in case of Cyber threats. Meanwhile we will be comparing European and neighbor countries practices with the rapport between the preventing aspects and penalty provision in Albanian legislation.

Keywords: cybersecurity, laws and regulations, Albania, threats.

Aldi Leka studies for Business Informatics at the University of Tirana, 3rd year Bachelor. He has had previous experiences in the cybersecurity field as Intern at Kamza Municipality and from school literature and projects.

Salijona Dyrmishi studies Business Informatics, University of Tirana, 2nd year Bachelor. Since January 2016, she is an exchange student at NTNU Gjøvik, Norway. She has an especial interest in information security.

Uda Mema studies Business Informatics at University of Tirana, 2nd year Bachelor. She is part of a program with a focus in Information Security and has an interest to be future engaged in this field.

Enkeleda Ibrahimi works as a Security & Investigation Analyst at Vodafone Albania where she is responsible for the implementation and improvement of Information Security Management System of the company. She has had previous experiences in the cybersecurity field as IT Auditor at PwC Albania and Intern at ALCIRT. She holds a Bachelor degree in Business Informatics.

Exploring the Capabilities of Deauthentication Attacks in WLANs

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Abstract

Wireless networks have a widespread usage in the consumer, commercial, industrial and military sectors. When it comes to security factor, they are considered fundamentally insecure, due to the nature of transmitting the data using radio waves and also due to the design of WLAN structure. While the security flaws in wireless confidentially mechanisms have been widely publicized, the threats to network availability are far less widely appreciated. This paper focuses on the DoS attack schema and the weak points of WLAN structure that this attack exploits. It demonstrates the implementation of a DoS attack on a real wireless network and also shows how it serves as an entry gate for other attacks. The paper concludes with some solutions and

recommendations in order to reduce the probability of being affected by this malicious attack.

Keywords: *wireless security, DoS attack, deauthentication, availability, WEP, MAC, AP*

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Currently he is head of Department of Informatics at the University of Elbasan "A Xhuvani". He has an extensive academic experience in teaching and research both in Albania and abroad, in various subjects including Computer Organization and Architectures and System & Network Security which are also his main research areas of interest.

***Arlind Bushi, Arta Leli and Ardit Elezi** received the BSc degree in Business Informatics from University of Tirana in 2015. They are currently MSc students in specialty of Information Security and are expected to receive the diploma in 2017. Their main interests are in Information Security field with focus on Cryptography and Network Security.*

SIP Security Threats And Protection From Those Threats

Gazmend KRASNIQI, Arta Gërmizaj CAKAJ

Abstract

Following the extensive usage of Session Initiation Protocol (SIP) protocol in many areas it is important to dig more in regards to the security systems based on VOIP technology that this protocol is using. The main problem that many people face while using SIP Protocol is how to design a network that would in a way mitigate the potential security threats. The general issues to be addressed nevertheless the more specific issues are as follows: (1)Which protocols to be used in every layer of the OSI model. Since the SIP packets is traveling throughout the network than this issues should be addressed since security attacks may appear in every level,(2)which type of algorithms are suitable for different types of security methods in order to avoid as much as possible the possible threats,(3)what is the importance and the usage of Digest Access Authentication, IPSec protocol, HTTP Digest Authentication,

Algorithm MD5, S/MIME and TLS protocols, Digital Signature, Symmetric RSA Algorithm when it comes SIP security? How these authentication methods and security systems can be used in order to improve the security of the network. The following softwares have been used: (1)VMware Workstation – This virtual server application is used to create users in order to conduct the calls, (2)AsteriskNow – Software is used to manage the calls and to create users, (3)Softphone EyeBeam – A necessary software that is used to generate internet calls, (4)Wireshark – The software is used to capture packets of SIP protocol and to analyze them. Furthermore, through a deep analysis of all parts of SIP packets more concrete conclusions can be derived. In this deep analysis for sure the header and the body of the message shall be taken into account since they provide the necessary clues in order to take the necessary measures. The methods to be used in order to be protected from potential threats are already available however it is a matter of method combination in order to achieve the desired results.

An overview of human factors in Information Security management in public sector

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Abstract

Due to technological development, information security (IS) management has become a very important issue nowadays. Although there are numerous technical advances in information sciences, those do not always produce more secure environments. Therefore information security cannot be understood or described only as a technical problem. An organization's approach to information security should focus on human factors, as the organization's success or failure effectively depends on the things that its employees do or fail to do. An information security-aware culture will minimize risks to information assets and specifically reduce the risk of employee misbehavior and harmful interaction with information assets. In this paper we will do a presentation of theories that exist on human factors and how they affect the management of information security. Also we will focus on making an objective comparison of these theories with the state of human factors in the public sector, based on interviews conducted with IT staff.

Keywords: *information security management, human factors, public sector*

Elda KUKA has graduated the University of Tirana, Faculty of Natural Science, Informatics branch in 2003. She holds two master degrees, the first in "Informatics" and the second one in "Business Administration" from 2008, both from University of Tirana. She has worked for several years in public sector holding different managerial positions in ICT directorates. The main focus of her work has been information security which has become the field of her studies for her PhD diploma. She is working as an assistant professor at the University of Tirana.

Ezmolda BAROLLI has been graduated in the Faculty of Natural Sciences, UT in 1998. She holds a Master diploma in Business Administration from 2002 and a PhD diploma in Information Technology from 2010. She had gone through all didactic positions since 2000 when she joined the staff of the Faculty of Economy, UT, from teaching assistant in 2000, senior lecturer in 2008, and assistant professor in 2015. Currently she is Assistant Professor of Informatics in the Department of Statistics and Applied Informatics at Faculty of Economy, UT. She is the author of 2 books and over 10 journal articles and 20 conference papers in the field of information technology, computer network and security. Her work focuses on the analysis of computer networks performance and service management in wired and wireless networks.

Legal and ethical considerations for transmission and storage of shared e-health data: A review

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Abstract

Electronic health records simplify numerous innovations qualified of revolutionizing health care. Despite their advantages, there are legal and ethical issues when coming to transmission and storage of shared e-health data. Key legal considerations that must be addressed in the near future relate to the expanse of clinicians' responsibilities for reviewing the entire information of integrated e-health records that contain data from different sources, the liabilities imposed by not following clinical decision support recommendations, and tools for clinicians to report in public potential e-health records safety concerns. Ethical considerations that require further discussions relate to requirements that exclude patients from saving electronic record, sale of unidentified patient data by e-health records providers, and teenage control of access to their data. Authors recommend that international and national organizations, service providers, industry and

other interest groups must address these controversial and urgent concerns systematically and jointly. The aim of these discussions should be to find and list solutions, by prioritizing them, to the major legal and ethical considerations addressed in this paper.

Keywords: *e-health, legal, ethical, transmission, storage, and health care*

Romina MUKA has graduated from the University of Tirana, Faculty of Economy in 2014. She holds a Master of Science degree in Information Systems in Economy. Since that time Romina joined the staff of University of Tirana, and in September 2015 she received the status of lecturer near the faculty. In March 2016 she was enrolled in doctoral school at UT, FE, DSIZ, in cooperation with the Norwegian University of Science and Technology (NTNU) in Information Systems in Economy and Information Security. Romina lectures subjects: Information Security, Management Information Systems, Computer Science, IT Project Management. She is the author of 8 scientific articles in the field of Information Systems, Information Security, Open Source Software and Business Intelligence. Her work currently focuses on scientific research in e-Health Systems: secure information transmission and storage.

Sule YILDIRIM-YAYILGAN worked as the head of the computer science department between 2006 and 2009 at Hedmark University College (HIHM) and at Gjøvik University College (GUC) between 2009 and 2015 before her current position at NTNU. She has recently been coordinating a project funded by the Ministry of Foreign Affairs, Norway. She has been participating in projects funded by the Research Council of Norway, Regional Research Council of Norway and the EU Eurostars Programme. She belongs to the Norwegian Information Laboratory, Center for Cyber Information Security and the Norwegian Biometrics Laboratory. Her main fields of interests are artificial intelligence, application of machine learning in various fields, biometrics, and image processing. She has been supervising tens of students in computer science, and currently supervises PhD students and postdocs, and acts as PC member in conferences of her research fields.

Prof. Dr. Kozeta SEVRANI has graduated the Faculty of Natural Science in 1984. She is a Professor of Computer Science and Management Information Systems, and Head of the Department of Mathematics, Statistics and Applied Informatics, at the Faculty of Economy, University of Tirana, Albania. Her research interests include: digital divide; issues and solutions in building information infrastructure, e-business, e-learning, e-government/e-business and e-services in developing countries, particularly in Albania. She is in the Editorial Board of several international journals and does an extended work in consulting private companies and government agencies in Albania. Also, she has presented her work in numerous national and international conferences. Her work has been published in several journals and she has co-authored four one monograph and four books. Professor Sevrani has been awarded many important prizes among them "The Academic of the Year" from the ICT Award Albania in 2014.

Business Continuity Planning in Albanian Companies

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Abstract

The rapid growth of technology has changed the way all businesses in all industries operate and nowadays almost all important functions of an organization depend on it. Considering this dependency it is inevitable not to consider that disruptions or disasters may occur during business lifetime. Therefore, modern businesses are required to incessantly monitor inside and outside factors that may affect the activity of organization. Threats like incidents, natural disasters, hackers or any type of disruption may happen; this can affect not only the operations of the company, but also its reputation or even take it out of business. The ability of an organization to cope with such unexpected events and to respond effectively or even minimize the effects of them is related to a good Business Continuity Plan (BCP). In this paper we aim to explain the importance of BCP and its process of development. A research has been done trying to examine the existence and maturity of Business Continuity Planning in Albanian companies, based on which we provide proper recommendations about how this crucial process can be improved considering local conditions.

Keywords: *Business Continuity Plan (BCP), disaster, Albanian companies, threats.*

Dajana Mulaj studies Business Informatics at University of Tirana. She is finishing her second year, meanwhile looking for new opportunities in the fields of Information Security and software development.

Salijona Dyrmishi studies Business Informatics, University of Tirana, 2nd year Bachelor. Since January 2016, she is an exchange student at NTNU Gjøvik, Norway. She has an especial interest in information security.

Enkeleda Ibrahimi works as a Security & Investigation Analyst at Vodafone Albania where she is responsible for the implementation and improvement of Information Security Management System of the company. She has had previous experiences in the cybersecurity field as IT Auditor at PwC Albania and Intern at ALCIRT. She holds a Bachelor degree in Business Informatics.

Network Virtualization: Impact on Security, Risks and Best Practices

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Abstract

The impact that virtualization has made in recent years in IT and networking branches is huge and has provided enormous cost savings and returns on investments. However what seems to be less substantial and underestimated is the understanding of virtualization and virtualized environments from a security point of view. Due to the complexity of new environment and virtualization approaches, it is important to consider beyond traditional security also new security approaches as additional security for virtualization. The main goal of this paper is to investigate this new trend of network virtualization, identify the challenges and risks, best practices and benefits with focus on security concerns. Moreover the paper demonstrates how some virtualization services allow the users to tailor security settings to meet the requirements and needs of specific use scenarios. Through implementation of appropriate security measures it is important to keep the security level high as it was before virtualization in accordance with user's expectations.

Keywords: *network virtualization, security services and measures, vulnerabilities, challenges, risks, best practices.*

Elior Vila has graduated in Electronic and Computer Engineering from Faculty of Electrical Engineering at Polytechnic University of Tirana. He received a dual Master degree in Industrial Management from Technical University of Sofia and Technische Universität Braunschweig respectively. Since 2010 he holds a doctor degree (Ph.D.) in Computer Science and Engineering from Faculty of German Engineering Education and Industrial Management (FDIBA) and Faculty of Computer Systems and Control (FKSU) of Technical University Sofia. After the Ph.D. he spent one year as postdoctoral researcher at the Center for Advanced Security Research Darmstadt - CASED of Technische Universität Darmstadt, Germany, working in the field of Hardware-based Security and Cryptography. Currently he is head of Department of Informatics at the University of Elbasan “A Xhuvani”. He has an extensive academic experience in teaching and research both in Albania and abroad, in various subjects including Computer Organization and Architectures and System & Network Security, which are also his main research areas of interest.

Anisa Hoxha, Malbora Poka and Sabajete Elezaj received the BSc degree in Business Informatics from University of Tirana in 2015. They are currently MSc students in specialty of Information Security and are expected to receive the diploma in 2017. Their main interests are in Information Security field with focus on Cryptography and Network Security.

Systematic Literature Review of Web Application Security Vulnerabilities Detection Methods

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Abstract

The use of web applications is increasing widely in the field of information economy. However the security of Web application is a critical issue, since many programmers do not have adequate knowledge about secure coding, so they let the applications run with vulnerabilities. Even though some research has been done in the security field, it is necessary to assess the current state of re-search and practice. Therefore, this systematic literature review is conducted to investigate the various security techniques, tools and mechanism used to detect vulnerabilities. The study extracted 1158 publications from scientific sources, such as IEEE Computer Society, ACM Digital Library, Science Direct, Springer Link. After a detailed review process, only 184 key primary studies were considered based on defined inclusion and exclusion criteria. In this Systematic Literature Review, we have performed deep analysis on web application security vulnerabilities detection methods which will help us to specify a future research.

Keywords: *web application, security, vulnerability, injection, tools, techniques*

The self-regulated model of a closed economy: An Agent-Based simulation model for experimental purposes.

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Abstract

Recently, the need to solve new economic problems is increasing, and the tools, which are currently in majority mathematical models, are hardly sufficient for an optimal way of solving these complex problems. Germane to an increase in usage of computer tools, new tools on performing economic research and creating economic models have been introduced. In this paper, one such tool will be presented by developing a model for experimental purposes. In agent-based modeling, or ACE (Agent-based Computational Economics), one can develop his own economic model, declaring all the assumptions and the rules of behaving in that model, in order to claim their prior hypothesis or even create new ones after scrutinizing the results of the simulations. The model presented in this paper, is a depiction of a closed-economy, which is self-regulated rather than controlled by a government with fiscal policies or influenced by foreign policies. The model is built on Relogo toolkit of the REPAST Symphony. It works as a simulation a real-life scenario of a closed-economy with the purpose of using such model for experiments or proof of theorems. In contrast with some other current ABM models on the economy which tend to use microeconomic principles to create a model, this current closed-economy model works on a macroeconomic level, bringing the big picture of the economy.

Keywords: *Agent-based Modeling, Computational Economics, Relogo, closed-economy, economic simulation*

Igli HAKRAMA is a PhD Candidate at University of Tirana in the Department of Statistics and Applied Informatics. He has graduated from the Business Informatics program under the same department in 2008 and holds two master degrees, one in European Economic Studies and another in Computer Engineering. He currently works as a lecturer in the department of Computer Engineering at 'Epoka University', where he has taught since 2009. His teaching activity has been focused on object oriented programming, web and software Engineering. His research focus is in artificial intelligence area and its implementation in the economic field, he is currently working on building agent-based models for economy by using AI algorithms.

Iris KRAJA is a Bachelor Student at Epoka University in the program Business Informatics, last year student.

Environment Monitoring In Public Transport Vehicles

Elson AGASTRA, Neki FRASHËRI, Tania FLOQI, Jorgaq KAÇANI,
Frederik PREMTI, Erjon SELMANI, Jonida TETA, Eralda XHAFKA

Abstract

In framework of European IPA-Adriatic Programme project KHE-STO, several buses of intercity lines Tirana - Durrresi and Tirana - Shkodra were equipped with computing systems, WiFi connectivity and environmental sensors. Temperature, humidity, monoxide carbon and LPG data were measured and uploaded in a website, presented into a Google map and available for retrieval and further processing. We have calculated averages of distribution of these environmental parameters in time of day and in space. Where possible the trends were calculated as well. In the paper a description of the sensory system and observed data are presented. In the line Tirana - Durrresi the average temperature resulted higher near both cities, while humidity represented very high osculations with a slight tendency or decreasing in mid day. In the line Tirana - Shkodra the temperature showed the same tendency of increase near cities (including Lezha) while humidity resulted lower near cities. Concentration of CO and LPG represented oscillations that require further investigation.

An Adaptive Architecture of Intelligent Sensing Systems in Water Pollution Monitoring

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Abstract

This work is focused on showing an intelligent sensing system under main system architecture of data monitoring. Conceptually, intelligent sensing systems are a new class of electronic sensing device that's literally revolutionizing the way we gather data from the world, how we extract useful information from that data and, finally, how we use our new found information to perform all sorts of operations faster, safer, and cheaper than ever before. We will bring an overview of the architecture regarding to individual intelligent sensors by communicating their information to other intelligent sensors or to other systems, allowing us to accomplish tasks that weren't possible before. At the end, we will show an adaptive model of smart sensing system in water pollution monitoring application. We are going to design an intelligent sensing system for water pollution measurement and monitoring under the changes caused by time and environment factors. The aim of this research is an effort how to adapt the design of intelligent sensors with information systems or other applications.

Keywords: *Intelligent Sensor, Transcoder, Smart Sensing System*

Eva Cipi has graduated the Faculty of Electrical Engineering, Polytechnic University of Ti-rana in 1987. She holds a PhD diploma in Informatics Engineering from 2013 and she is full teacher and member of computer science department, Vlora University since 2003. She is au-thor of 23 papers and 12 journal articles in the field of intelligent systems. Her work focuses on the analysis of increasing the efficiency of intelligent applications.

Nitrox Capture And Abatment By Digested Slurry Stripping Plant: A Case Study

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Abstract

The aim of the present work is to analyze from an environmental and technical-economical point of view a biogas plant coupled to a stripping column capable of ensuring a high level of nitrates contained in the digested substrate. Such a condition would allow a better use of heat from cogeneration; this heat is often un-used or partially used due to the distance between thermal users and plant, and can be utilized for the nitrogen retention in the digested substrate.

Then, a 300 kWe anaerobic digestion plant has been design, its feasibility analyzed. The plant is fed with cattle manure according to specifications given in the following of this work. The plant nominal power rate has been selected so as not to fall into the current incentive mechanism of biogas plants accessed only for sizes less than 100kWe, to assess the economic feasibility of the system in the absence of any form of incentive.

Keywords: *Anaerobic digestion, stripping process, nitrogen removal, generation plant*

Experimental Analysis of IPv4 and IPv6 packets – QoS perspective in real time for multimedia applications

Zhilbert TAFA, Shkëlqim BERISHA, Ismail MURATI

Abstract

Real-time multimedia communications have become the prevalent way of computer-based interactions today. To meet the user requirements, many applications have been developed. However, the actual communication quality may vary to the extent of unacceptable communication degradation. Many infrastructure- and technology- related factors can influence the real time multimedia quality of service (QoS). This paper experimentally explores the differences in QoS parameters when end-to-end communication is provided by using IPv4 and IPv6. The experimental network topology and protocols were executed in OPNET. The simulation framework enables for the inclusion and non-inclusion of the QoS provisioning into the Internet layer protocol data units. The results show the prevalence of IPv6 over the IPv4 protocol in all cases. In case of jitter, the IPv4 shows the unacceptable variation at the beginning of the communication for both video and audio signals. On the other hand, the jitter with IPv6 showed minimal values in our simulations. In addition to the other aspects that have been presented in literature, the study experimentally shows that the end-to-end implementation of IPv6 will also bring the practical benefits regarding the real time multimedia communications and will improve the user quality of experience.

KOSTT's Entrance in Telecommunication Market

Edmond HAJRIZI, Valon BERISHA

Abstract

In this study the possibility of KOSTT's entrance to Kosovo telecommunications market has been analyzed by considering the technical and legal problems. The actual devices and capacity of fiber optic network in KOSTT are dedicated for the own needs of the company. By using the experiences of the companies in the region, the solution has been proposed with MPLS-TP devices, as soon as this devices has capability of integrating the TDM interfaces and the packets from potential clients. The SWOT and PEST analysis have been performed. The "dark fiber" technique has been proposed for the entrance of the company to the market, then the new devices should be integrated in order to rent the fiber optic capacity. The

fiber optic network of KOSTT has wide coverage, therefore this network could also be used by public institutions in Kosovo. The preliminary market analysis should be performed in order to define the exact capacity needs and then the required devices should be defined and the staff training should be performed.

Backup implementation of data center and data replication

Bertan KARAHODA, Zenel HISENAJ

Abstract

The idea of working on this project was to use current technology and have all the data controlled and to use best hardware for this process. It was a great challenge because for the realization of this project the solution had to be very practical. In this paper it is described a replication of data. This paper describes a process of the transfer of data in different places, also knowing the importance of the hardware in this process, since it is very important to know what kind of hardware is needed as it must be configured very specifically in order to be functional to this process. This work is implemented in an institution which has used precisely this temporary solution for data transfer, as this solution was more effective and had a very low cost. This Institution for the transition period being applied this methodology has spared over 250,000 Euro. The contracting authority has submitted a request in order to have all necessary information. The Authority already owns various DB in a single place thus it filed several requests. Requests of the Authority were: (1) The Authority should have all the data and do not have any loss of their, (2) The analysis if 38 DB are necessary or this number can be reduced, (3) The analysis of all information if they should be distributed to all DB or only to accumulate them in a single DB, (4) Problems with the administration of DB, (5) The time of replication, (6) Monitoring Process. With the current trend of increasing data and the need for their conservation and management, it is very important that personnel must understand the data storage and the importance of them in the organization. Part of this work is the replication of data in the context of this paper is given a way how to do replication of data, as well as some procedures are developed in MS SQL SERVER replication.

Business process reengineering

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Abstract

One of the techniques that is available to management for gaining substantial operational improvement is business process reengineering (BPR). The technique was developed at MIT and popularized by Michael Hammer.¹ BPR fundamentally differs from the scientific management approach; whereas scientific management concentrated on the optimizing functional tasks, BPR aims to deliver dramatic improvements in response time, service and quality by focusing on customer orientated business process. The development in information technology has allowed organizations to start the process of integrating various functions within the organization as well as between different organizations. Many organizations are beginning to use IT and their IT infrastructure to gain a competitive advantage. The requirement for sharing data and information between financial institutions, markets, clients as well as regulatory agencies has meant that organizational boundaries are much more permeable to IT. These electronic links allow organizations to share information and thus can help expand their joint capabilities. This type of IT-led business integration is leading to the development of virtual organizations that will develop new strategic relationships between institutions and their customers, as well as new relationships with exchanges and the regulators. This shifting of the boundary of the organization out to include elements of other organizations offers an alternative to the strategic options of vertical or horizontal integration. This information exchange and sharing for mutual advantage enables greater efficiency, flexibility and innovation to respond to market requirements.

The future of networking: Software Networks

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Abstract

Internet and mainly today's computer network environment, has seen a powerful evolution and success. But contradictory with this, engineers and architects, have concluded that as result of its ossification, internet is becoming more and more difficult to develop and move forward. Different vendors, with different technology, have emerged Internet in a situation in which we can deal with, only if a broad understanding and convergence is

achieved between, the two main actors: R&D community and the investors. But what happened is that as the time flew, the academic researchers, found more and more less space to contribute and to share they ideas. All this has occurred during the past ten years, where the internet found his major development, from several factors. Among them I will discuss the most important and with the most significate contribution and also will introduce the Software-Defined Networks model. This model will be briefly analysed in a position paper with his major strengths and weaknesses over the today model of Internet.

Keywords: *Software Defined Networks, remote networking, controllers, switches, security*

Akli Fundo has graduated the Department of Mathematic Engineering, Mathematical Engineering and Physics Engineering Faculty, Polytechnic University of Tirana. He holds a PhD diploma in mathematics and applied science and he had gone through all didactic positions since 1996 when he joined the staff of the Faculty, teaching assistant in 1996, senior lecturer in 1998. Currently he is full Professor of Mathematics within the Department of Mathematic Engineering, Mathematical Engineering and Physics Engineering Faculty, Polytechnic University of Tirana. He is the author of some books and over 30 journal articles in the field of mathematics.

The Impact of Network Virtualization on Next-Generation Internet: A Theoretical Perspective on Provision, Management and Control

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Abstract

From the beginning Internet architecture has evolved continuously, adapting to the needs of its users and incorporating new technology. Today the Internet undoubtedly may consider a great success and a crucial infrastructure for worldwide communication. However its architecture is no longer supporting the long-term growth and innovation. In the last few years, network research community have come to conclusions that network virtualization opens up new possibilities for the evolution path to the Future Internet by enabling the deployment of different architectures and protocols over a shared physical infrastructure. In this paper, we will look at the

architecture of the Internet today and will describe network virtualization architecture as a technology for enabling Internet innovation. This architecture is motivated from perspectives of provision, management and control.

Keywords: *Network Architecture, Network Virtualization, Network Management.*

Prof. As. Dr. Ezmolda BAROLLI has been graduated in the Faculty of Natural Sciences, UT in 1998. She holds a Master diploma in Business Administration from 2002 and a PhD diploma in Information Technology from 2010. She had gone through all didactic positions since 2000 when she joined the staff of the Faculty of Economy, UT, from teaching assistant in 2000, senior lecturer in 2008, and assistant professor in 2015. Currently she is Assistant Professor of Informatics in the Department of Statistics and Applied Informatics at Faculty of Economy, UT. She is the author of 2 books and over 10 journal articles and 20 conference papers in the field of information technology, computer network and security. Her work focuses on the analysis of computer networks performance and service management in wired and wireless networks.

Dr. Albana GORISHTI has a Bachelor in Mathematics from the University of Tirana, Faculty of Natural Sciences (1996). She holds a Master diploma in Applied Mathematics from 2008 and she had gone through all didactic positions since 1997 when she joined the staff of the Academy of Sciences of Albania, teaching assistant in 2000 and actually works as lecturer of Applied Informatics within the Department of Statistics and Applied Informatics at the Faculty of Economy, University of Tirana. Mrs. Gorishti holds a Ph.D. in Information Technology from University of Tirana, Albania. She has an intensive experience in the field of IT. She has been involved in different projects and also worked as programmer and system de-signer. She has presented her work in numerous national and international conferences and has published in several journals.

Analysis of the performance on DWDM ring networks

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Abstract

Wavelength Division Multiplexing is a technology, which enables bidirectional communication over the fiber. This technique is used in optical ring networking technology, which allows the full fiber ring bandwidth to be utilized. DWDM ring networks provide greater maximum capacity it tends to be used at a higher level in the communications hierarchy. In this paper we

analyze the performance on DWDM optical networks by using optical amplifier EDFAs.

Keywords: *fiber, ring networks, optical amplifier, DWDM, EDFA*

The impact of the use of photovoltaic systems toward a modern economy in condition of Albania

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Abstract

International energy crisis and the integration into the European Community dictate the large-scale use of renewable energy sources (RES) in general and photovoltaic systems in particular. Photovoltaic systems represent a form of renewable energy very suitable economically and environmentally for Albania, which fortunately has an excellent geographical position and very favorable weather conditions. The most prominent applications in the field of using solar energy are electricity supply of housing in deep mountainous areas, the use as alternative source of energy for institutions, for the system of street lighting, etc. Implementation of photovoltaic systems bring significant economic benefits, as well as reducing the electricity consumption of the network, saving land resources, environmental protection, diversity in the supply of electricity, lack of technical problems in the network, etc. The government policy and public opinion should be aware for increasing use of RES, because this directly affects in economic and social life of population. Albania moves safe to-ward this road.

Keywords: *renewable energy sources, solar energy, electricity, photovoltaic system*

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Elda CINA has graduated the Faculty of Electric Engineering, Computer engineering of Polytechnic University of Tirana in 2006. She also holds a second level diploma in Business Administration from 2009 at the Faculty of Economy, University of Tirana. From January 2015 she has a PhD in Image compression and

security, from Faculty of Economy, University of Tirana. She is working as a lecturer in the “Aleksandër Moisiu” University of Durrës for 9 years now. Currently she is head of Information Technology department in the Information Technology Faculty. She is the author of 1 book in Networking and some different articles in the field of information Systems. Her fields of interest are networking, computer architecture, signal processing, etc.

Web 2.0 for business and society, Case study: LuginaShop.com – Preshevo Valley

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Abstract

This paper presents a web-based solution for online booking, more exactly for Preshevo Valley, by building an online shopping environment. The rapid growth using online services it seemed important and useful for all online clients the business lunch (access) in a web-application, that's why we decided to show and research a requirement model for online shopping and lunching the business online in Preshevo Valley. First of all we have been concentrated to make a user-friendly web application, which will enable customers within Preshevo to shop online; and also giving some statistical analysis of the used implemented platform considering that such an application which enables user's online shopping has been absent.

Keywords: *Web-based applications, online services, online shopping, statistical analysis, business.*

Besnik REXHEPI is a bachelor student at University of Tetovo – Macedonia, Faculty of Math and Natural Sciences in the Department of Informatics.

Agon MEMETI is Assistant Professor at University of Tetovo, Department of Informatics. He holds a PhD diploma in e-Technologies from March 2016. He is working as a full-time assistant professor in University of Tetova – Macedonia. He attended several International Conferences. His work focuses on the object oriented programming and web programming.

Some exploration techniques on climatic features through clustering of meteorological data

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Abstract

There are huge quantities of climatic data collected by the meteorological studies institutes around the world and there is a great need to analyze them. Exploring this data can provide improved estimations of weather, climatic and ambient tendencies that are noteworthy from both the scientific and practical point of views. In this paper, the challenges emerging by weather databases are discussed and the use of fuzzy clustering for analyzing such data is demonstrated. It proposes a generalization of the fuzzy K-Means clustering algorithm in order to handle the spatial and temporal nature of weather data in a more efficient way. The probabilistic fuzzy clustering algorithm is described as an improvement of the fuzzy K-Means algorithm in which the number of partitions is not an input of the algorithm. Finally the perspective of an implementation of the techniques mentioned above, to the study of the Albanian climate features is given.

Keywords: *Clustering, Exploratory analysis, K-Means, Fuzzy c-means, Climate data*

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Field Data Monitoring Through A Sensor System Of Low Cost To Albanian Farmers

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Abstract

Monitoring of climatic data (humidity, ph, etc.) is very important to be used to the profit of the farmers and consumers assisting them in their work. The aim of this article is to analyze the ways a sensor system can be built with reference to Albania. The goal is for the sensor system to be easy to use and of low cost taking into consideration the incomes of the Albanian farmers. Methods of study: There will be built the sensor system ARDUINO which is useful for the extraction, analysis and storing of data accurately for each farmer in real time.

Keywords: ARDUINO monitoring, data, PHP, GSM, data base.

Dhonat KOTE has graduated the University of Macedonia in Applied Informatics. He is a PhD student and his work focuses on the integration of informatics systems in Albanian farm-ing. Currently he is the director of University of Tirana Saranda Branch.

Parallelized Algorithms For The Eigenvalue Problem

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Abstract

The eigenvalue problem is a wide and interesting key object in varies fields of mathematics; mentioning the polynomial root-finding problem, solution of higher order of ordinary and partial differential equations problems etc. The necessary of dealing with large matrix dimensions, has leaded to ways of how to parallelize the algorithms for finding the eigenvalue of a given matrix. Most classical methods mentioning the QR algorithms, which behave very well in sequential programming, do not give good results in practical implementation in parallel environment. In this paper we will propose a modification of this algorithm, and we have measured the performance of the parallel implementations and calculated the speed-up of this algorithm. We have compared our results with others who have tested for other methods.

Keywords: eigenvalue problem, matrix, parallel programming, algorithm.

Content-based Multi-platform App Forge

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Abstract

Mobile App development arises new dynamism for both device platform and device equipment. New solution projects and solution maintenance sustainability is at risk due to this variability. Some entry-level and build-by-template solutions are emerging. This experience demonstrates the solution we found when working together with market leaders in cultural-heritage video-guide: new digital editorial artifacts. We used open-source CMS system to manage different type of content and to generate complete software package for various mobile platform. The client-side App is based

on Cordova framework and JavaScript framework selection and optimization. This system completely covers digital mobile publishing product life-cycle from digital asset management to App (web or mobile) deploy or updates management systems, including in-App purchase content and incremental update.

Keywords: *Mobile Apps, Hybrid Development, Digital Assets Management, Software Generation, Javascript Software Engineering*

***Davide Rogai** has graduated the Faculty of Engineering in 2001. He holds a PhD diploma in Telematics and Information Society from 2006 and he had been Contract Professor for three years after (until 2008). After this academic experience he decided to become an entrepreneur and start Commit to provide consulting about software engineering and digital solutions in general. After 8 years of growth with the Italian Company he looked to Albania for internationalization with the idea of building a new software factory. Currently he is the COO of Commit in Italy and the CEO of Commit Software SHPK. He is the author of 2 journal articles (produced during academic period) and a contribution to the ISO/MPEG standard. His work focuses on the business development, scouting of new technology and research for new solutions for the B2B market.*

The role of Video Optimization for Albanian Cellular Operators

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Abstract

Mobile Video is a huge portion of the traffic on mobile networks today and is expected to increase to about 80% of the overall traffic on any mobile network for year 2019. This exponential increase of the video traffic poses serious problems to mobile operators all over the world. Adding capacity to Radio Access Network is a very expensive proposition and at the same time it requires a considerable amount of time since it involves high degree of coordination between technical efforts (actual work on the terrain) and administrative hassles with the permits from the local government entities. While technical solutions to alleviate the pain for the network operators exist, the Internet is a ever changing reality, always there are new delivery mechanism for the content involving well thought protocols. The existing solutions hardly can cope with the new reality of the Internet, such as the massive use of secure traffic (HTTPS) and the latest Google QUIC protocol

based completely on UDP. What we will discuss in this paper is what can and should Albanian Mobile operators do to improve their profitability; should they deploy any modern video optimization solutions? Do such solutions exist and how can they address the needs for Albania ?

Keywords: *Albanian Mobile Operators, Video Traffic Increase, Video Optimization, HTTPS, QUIC, HTTP-PD, ABR.*

Virtualization of ANA resources through Linux Containers

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Abstract

Linux containers—compartmentalized and isolated application environments—offer utility, scalability, and low development and implementation costs. Such savings and functionality allow organizations to grow and adapt their IT infrastructure. This paper provides a short description on container technology, two of the main approaches LXC and LXD, how it works, and its benefits while being applied in the Academic Network of Albania.

Keywords: *Containers, LXC, LXD, Docker, Virtualization, Linux, Ubuntu, RASH*

***Besmir ZANAJ** is Head of Infrastructure and Network Department at Academic Network of Albania – ANA. He has a vast experience in system administration and IT management. Experienced in managing complex computer architectures in all OSI layers from physical to advanced distributed applications. He has held position as Senior System Administrator, IT Man-ager and Information Security Officer working for different companies in Austria, Canada, Italy and Albania. He is an international auditor according the ISO 27001 Information Security Management System Standard.*

***Dr. Arjan XHELAJ** – PhD in Biophysics & Applied Physics, Dr.Phil.Nat. in Physic in University of Frankfurt am Main. MSc in Engineering in University of Siegen, Germany. Director of Interuniversity Service Center and Telematic Network (Academic Network of Albania). Lead person on establishment of the national Interuniversity Center for ICT services for University Management systems the Telematic Network for Universities, Research Institutes, Academy of Science and the Agencies for Higher Education/ Research/ Innovation. From 2009 till now Dr. Xhelaj used to exercise leading position at the Education area-Director Higher Education*

and Research Department (MoES). He also holds teaching positions on Higher Education Institutions. He has a rich research experience in his expertise field. He is Member of Board of Governors in Joint Research Center DC in EU Commission.

Taulant NGJELO is one of starters of the Infrastructure and Network Department at Academic Network of Albania – ANA. He has delivered a rich contribute administering the backend of the software used from Albanian Universities. He is also the responsible of implementing and maintaining the Datacenter and Network infrastructure. He owns main network certifications and has a rich background in System Administration.

Collecting Automatically Informations Through Web Scrapping

Artur NURJA

Abstract

As the analysis of data increasingly became crucial on studies, business, media, etc, a multitude of different websites try through different approaches to bring other new, updated, information, information on information and so on. Web scrapping can be a method to use this information. A multitude of applications exist to preform web scrapping. This paper try to discuss this method from different point of views, and to use it on gathering statistics on mobile applications through mobile app store websites or other mobile application analytics websites.

Keywords: *web scrapping, analytics, mobile apps*

Implementing an application for synchronization of different services in the Cloud

Bertan KARAHODA, Ramiz HOXHA, Bajram FEJZA

In everyday life we always seek services, which help, support, facilitate and shorten the time. Today we have PC, tablet, smartphone, etc., each have input devices that we use and are imperative for work or private data. To access this data from each device at any time and into one place, use Cloud services. This research paper validated the importance and advantages of using Cloud services, browsing information for companies that offer such services as Dropbox, Google Drive, etc. Also tests the performance, security and their management services, by analyzed and comparing the results a conclusions of different research papers of these could services. The

conclusion of this paper has were able to prove the importance and advantages of using these services. In addition is implemented client interface application which enables use of these services provided by Dropbox and Google Drive cloud platforms.

Developing Reliable IoT Systems For Improving Quality Of Life Through The Exploitation of Cloud, Mobile and BLE Based Technologies. Case Study: SunProtect UV

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Abstract

Connecting various smart objects within an intelligent ecosystem provides high capability of developing and integrating mobile, cloud and embedded device communications based on existing internet infrastructure. This has been the trend of Internet of Things (IoT), addressing health, quality of life, smart cities etc. In this paper we shall describe similar aspects with a proper case study in which a health related mobile cloud application interconnected with a wearable device shall be presented. The research undertaken shall represent not just the technological innovation, exploiting state of the art technology, but also the health benefits related to this smart system.

Keywords: *IoT, Smart Devices, Cloud, Mobile, Embedded*

GPU Implementation over IPTV Cloud Network

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Abstract

One of the most important issue in IPTV Cloud Network is Bandwidth Issue and Quality of Service at the client side. Decidedly, it is required high level quality of images in low bandwidth and for this reason it is needed different transcoding standards (Compression of image as much as it is possible without destroying the quality of it) as H.264, H265, VP8 and VP9. During a test per-formed in SMC IPTV Cloud Network, it was observed that with a

server HP ProLiant DL380 g6 with two physical processors there was not possible to transcode in format H.264 more than 30 channels simultaneously because CPU's achieved 100%. This is the reason why it was immediately needed to use Graphic Processing Units called GPU's which offer high level images processing. After GPU superscalar processor was integrated and done functional via module NVENC of FFEMPEG Program, number of channels transcoded simultaneously was tremendous increased (more than 100 channels). The aim of this paper is to real implement GPU superscalar processors in IPTV Cloud Networks by achieving improvement of performance to more than 60%.

Keywords: GPU superscalar processor, Performance Improvement, NVENC, CUDA

Esmeralda Hysenbelliu holds a Bachelor Degree (2007) and a Scientific Master Degree (2010) in Electronic and Telecommunication Engineering from the Polytechnic University of Tirana, Faculty of Information Technology. She has worked as adjunct lecturer at Faculty of Natural Sciences from 2013. She is PHD Candidate at the Polytechnic University of Tirana, Faculty of Information Technology. Her work focuses on Software defined Networking for Cloud.

Implementing of Cloud Computing in Albania

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Abstract

Cloud Computing is a successful step in generous development of internet and business different models. A huge number of services at all the globe is an indicator that proves the success of this technology. Cloud Computing is a way for the insurance of some services for the virtual machines, divided in a big group of physical machines which stay in cloud. Software service of cloud is a way of offering the computing services and software distribution along the Internet. This concept combines Cloud Computing with Software-as-a-Service. One of determined characteristics of cloud software services is the control transferring from the client to the service offer. In this work we will say how we can implement computing cloud technology in Albania.

Keywords: Cloud, Data Center, SaaS, PaaS, IaaS, Cost Model

Ariana BEJLERI is graduated at Polytechnic University of Tirana. She has finished the PHD studies at 1995. Now she is assistant professor in this University. She has published lot of articles Computer Science Journal and Conferences.

Besmir KANUSHI graduated at "Ismail Qemali" University of Vlora. He has finished the MSc Economic Infomatics studies at 2014. Now he is asistant professor in Albanian Univer-sity. He has published lot of articles Computer Science Journal and Conferences.

Energy efficiency in the cloud: A survey of different studies based on this subject

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Abstract

Environmental issues are receiving wide attention from business and governments worldwide. Many businesses have found that green IT initiatives, and strategies to reform the organization may, in accordance with laws and regulations, saving energy costs and improving their environmental impacts. One of these green IT initiatives is to migrate or build business applications in the cloud. In this paper, is presented an overview of some of the various studies related to energy efficiency and cloud computing. These studies are done to assist organizations in selection of the most appropriate and efficient energy models, when they move their applications to the cloud or build new applications on the cloud. The works focus on how to use the cloud technology as a solution to energy efficiency from the perspective of applications. This paper will serve to obtain information that can be used in future studies on this topic. Studies can relate to identification architectures for cloud applications based on technologies and cloud features, such as virtualization and elasticity that can potentially make them green, and identifying links between these architectures models of processes business, used in the design of greener business processes.

Keywords: *energy efficiency, cloud computing.*

Valma PRIFTI has graduated the Polytechnic University of Tirana, Albania, with Bachelor (2005) and then Master (2007) degree in Telecommunications, Electronic Engineering. Then graduated the Economic Faculty, University of Tirana, Albania, with Master degree in Busi-ness Administration (MBA) (2011). Currently she is lecturer within the Sector of Economic Engineering at Polytechnic University of Tirana, Albania. She is a PhD student at the School of Doctorate at the Department

of Applied Mathematics at the Faculty of Natural Sciences, University of Tirana, Albania.

Why Portals In Albania Should Go Mobile

Xhulio MITRE, Adriola FAQOLLI

Abstract

Portals for a long time have used social media as a marketing channel. They are largely based on the advertising revenue model. Currently there is a glut on the market which leads portals to a strong competition with each other in order to capture the audience. On the other hand they are facing financial difficulties as a result of their low visibility. This paper is focused on the importance of using mobile technology. This technology will help portals to convey the information in an alternative way, to increase user base and to create other revenue models.

Vulnerabilities and Common Threats in the Mobile World

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Abstract

The valid security of a mobile solution is related to various issues such as a secure device, a secure network, and a secure application, where any of these has a key role and cannot be ignored. However the security efforts are moving from the device level to the application level. This paper focuses on the risks associated with mobile applications and data related to different types of attacks. It is a review of relevant vulnerabilities which can help any organization that has or is developing sensitive or high-value B2C or B2B mobile applications that run on any platform in normal or critical circumstances. This work concludes with some vulnerability countermeasures, which would help the developers to build a secure mobile approach.

Keywords: *Mobile Apps, Mobile Security, Mobile Vulnerabilities, Mobile Threats*

Elira HOXHA is a lecturer at the University of Tirana, Faculty of Economy, Department of Statistics and Applied Informatics. Experienced in web development and responsible for teaching Database Systems, Software Engineering and

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Kreshnik VUKATANA is a lecturer in the University of Tirana, Faculty of Economy, Department of Statistics and Applied Informatics. Responsible for Mobile Applications, Database Systems and Web Technologies. Holds a PhD diploma in Information Systems in Economy, with a thesis in the field of Food Traceability.

Using Cloud Computing in E-Gov can improve the provision of administrative Public Services in Albania

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Abstract

Albanian government has made significant ICT investments aiming to achieve effective e-governance. Out of the four steps of E-governance maturity: Information or Cataloguing, Transaction, Vertical Integration & Horizontal Integration, Albania has already achieved the first and the second stage of e-governance. Working to complete the stage three of e-Gov maturity, the advantage of the Cloud platform should be considered. The development of the cloud computing market and the efficient delivery of cloud services offer enormous possibility to advance in the E-governance maturity and specifically in the provision of administrative Public Services in Albania on line. This paper presents the methodology of using Cloud Computing in the case of E-Government in Albania. The characteristics of the Cloud which are scalability, accessibility, high availability, service orientation, interoperability and information security make it a very attractive platform to host and operate E-government applications. By analyzing the elements of the Cloud platforms such as communication, computing and storage, the paper reviews many solutions suitable for Albanian situation and the ICT development stage in public administration organizations. It argues that implementing the cloud platforms will enhance significantly the public service delivery and will reduce the government costs accordingly. Being relatively a new approach, the technology, practices and implementations of Cloud Computing need to be monitored, tested and improved before being implemented in a full scale.

Keywords: *E-Governance, Cloud computing, Standards, Public services, E-Government, Albania, ICT*

Developing Web-Based Applications using MongoDB and Node.js

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Abstract

Open-source programming languages are changing the way of web-based applications development. Universities also can take advantage of these programming languages in terms of scalability and flexibility, which have been a challenging concern for web-based programming. This paper presents a Node.js and MongoDB based solution for building a virtual and personal learning component for University of Tetovo providing better: Mobile, decentralized and just in time learning; speed of implementation and updating; virtualization and easy to monitor data entry and access. It presents the positive impact while developing through open-source programming languages operating for the exclusive use, enabling their own users (learners, instructors, and administrators) to perform their tasks effectively, and as a case study schedule registration, utilizing the traditional manner of course registration in different study programs.

Keywords: *open-source, scalability, flexibility, Node.js, MongoDB, programming languages.*

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Design and Simulation of Control Systems for a Mobile Robot Platform

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Abstract

In this paper were designed automatic and accurate control systems for wheel speed and steering of a mobile robot. In this study were designed and simulated three controllers, including lead-lag compensator, Proportional-Integral-Derivative (PID) and fuzzy logic controller to control the angular rate of the shaft of a DC motor actuator for mobile robot that moves between two borders that limit its trajectory in order to perform image acquisition task through a digital camera mounted on the robot base. The response of the actuator model for each controller were determined and compared for a sinusoidal and a step input that simulated robot speed and positioning references respectively on Matlab Package. Simulation results showed the effectiveness of the fuzzy logic controller design in wheel speed control, while the PID and lead-lag compensator had a better response for the wheel steering task. The conclusion of this analysis was a proved satisfaction of the proposed design criteria which results enhanced mobility of the robot in terms of fast response, speed control accuracy and smooth steering at row-end turnings.

Keywords: *Mobile Robot, DC motor, PID Controller, Fuzzy Logic Controller, Matlab Package*

Trends That Can Define the Future of Cloud Computing

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Abstract

Cloud Computing is present now in every part of our digital life. There are two big reasons that leaders across every industry are enthusiastic about the Cloud. One reason for this huge confidence in Cloud computing is that it is one of the most disruptive technologies to have emerged on the scene in the last decade. The second and what I think is a far more critical reason is what the Cloud, its adoption and application promises for the future. It is when business owners “foresee the future” of the Cloud that they say to themselves, “Yes, this is the technology that I want to tie my business fortunes to”. During last 3 years it is evident also in Albania the trend of implementing Cloud Computing infrastructure. This Paper will treat the trends that can define the future of the Cloud Computing

Keywords: *DevOps, Docker, RightScale*

The Amount Of Oil Forecast In an Albanian's Source

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Abstract

Oil is the rawest energetic material with a wider use and irreplaceable, its needs are continuously growing. Albania exploitation of existing oil fields has been continuously de-creasing its production. After 1990 we have seen a slight increase in the oil production; however Albania imports 90% of its oil. In this article we will do a statistical analysis of the quantity of oil which was produced in a gas field during 1957-2015 periods. This study intends to build a prediction model for the oil quantity in our model using ARIMA (Auto-regressive Integrated Moving Average) and ES (Exponential Smoothing). These models are the most common models used for oil prediction. Our series is one of the series which has an ascending and descending trend and seasonality lack. The best model to predict is ARIMA (0,3,2). Our results show that this model works effectively. For the future, this model is a useful tool to predict the amount of oil that we will expect to find in the oil field.

Keywords: Oil, Time Series, ARIMA, ES, Forecast

***Oltiana TOSHKOLLARI** has graduated the Faculty of Natural Sciences; she received a MSc. from Tirana University in 2012. From 2012-2014 she was Informatics adjunct professor at "Ismael Qemali" University of Vlora. From 2013 - Present, she is part-time lecturer of Mathematic Science near Polytechnic University of Tirana. Currently, she is lecturer of Information Technology at "Alexander Moisiu" University of Durres, where she has been lecturer since 2014. Her work focuses on the applied sciences and information technology.*

***Viola SHTINO** is Information Technology adjunct Professor at "Alexander Moisiu" University of Durres, where she has been lecturer since 2013. She received a MSc from Tirana University in 2012. From 2012-2013 she was lecturer of Mathematic at "Ismael Qemali" University of Vlora. From 2013-2015 she was part-time lecturer of Applied Mathematic near Faculty of Natural Science, University of Tirana. In 2013 she took the title of fiscal experts.*

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Risk management & Analyses in Albpetrol Company Using Simulation with Crystal Ball

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Abstract

Risk management is a process to assist in the decision-making. The risk management process takes the potential hazards as a starting point, in order to identify suitable arrangements and measures for accident prevention and emergency response in case of an incident. Risk Management with Applications from the Offshore Petroleum Industry presents an in-depth discussion of some fundamental principles of risk management, related to the use of expected values, uncertainty handling and risk acceptance criteria. "Albpetrol " Company operates directly or through agreements hydrocarbons for use in 7 areas oilfield, of which 2 in sandstone formations and 5 in limestone, reaching to ensure a steady increase in crude oil production. Based on leading indicators economic financial “Albpetrol” Company, especially those that show the degree of utilization of geological reserves, shows that existing deposits have sufficient capacity to in-crease production and improve the base of their economic indicators.

Keywords: Risk Management, Offshore Petroleum Company, Simulation, Decision Making Process, Risk Analyses.

Blerta Mjeda has graduated the Faculty of Economic, University Luigj Gurakuqi Shkoder, branch Business-Administration in 2003. She finished a master program in BRIE Bulgarian and Romanian Interuniversity Business-Informatics in Romania, Bucharest, and with a six month internship in Bremen, Germany. Actually she is a PhD candidate at the University Tirana, Faculty Economic, Branch Statistics and Informatics. From 2005 till now she is an Assistant lecturer at the University of Luigj Gurakuqi Shkoder, Faculty of Economic, and from 2013 and now she is a lecturer at Epoka University at Faculty of Business Administration. She has participated and presented articles in the International Conferences in Shkoder, Kosovo, and Tirana. Her main focus is on analyzing the risk management in the petroleum, gas and oil companies, also very important analyzing the risk on water and waste management, saving energy, transportation, the public services and the regulation within these.

Interactive e-Government. An assessment of the 4-stage model of the Albanian Government Portal (e-Albania)

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Abstract

Over the last decade, governments globally are focused at improving public service delivery, providing highly effective and efficient services and bridging the gap between them and citizens/businesses. The facilitation of digital interaction between the above mentioned entities in Albania is driven by the establishment of the National Agency for Information Society (NAIS) and the creation of the e-Albania portal, the unique governmental portal which enables centralized e-services delivery for citizens, businesses and government employees and ensures interoperability of the Albanian state systems and databases through its connection to the Government Interoperability Platform. This paper will bring a comprehensive view of the Albanian Government Portal, evaluating in details its functionalities and its four-stage model of e-services that tend to meet today's needs: be digital, open and cross-border by design. Moreover, an assessment of the total number of the services provided and transactions performed in the Government Gateway during the last years will be presented. Finally, the usability of e-Albania portal will be evaluated, by providing statistical data about its users.

Keywords: *e-government, e-services, e-Albania portal, interoperability*

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Smart cities: An Albanian approach in public services delivery

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Abstract

More than half of the world population (54%) is currently living in cities while the UN estimations predict that this percentage will increase to 66% in 2050 [1]. According to INSTAT data [2], the percentage of the Albanian population living in cities has experienced an increase from 42% in 2001 to 58% in 2016i. It is now clear that the urbanization process poses numerous challenges in managing the urban areas, in meeting the needs of the growing urban populations as well as in public services delivery. Due to resource limitations, there will be a problem in the future to provide all the required services to the citizens. In order to continue offering qualitative public services and improve the standard of living of the growing urban population, it is essential to develop smart cities. Smart cities aim to make maximum use of ICT in ensuring quicker service time delivery, improving functioning of a variety of systems and services as well as the overall citizen satisfaction while maintaining a proper balance between social, environmental and economic costs. In this paper, we will analyze current smart cities public sector approaches that have already been implemented in Albania, as well as suggest new approaches that can be used in the future to guarantee qualitative public services for citizens.

Keywords: *smart cities, public governance, urban population, kiosks*

Managing a retail brand through social media as part of an Entrepreneurial Marketing approach

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Abstract

The article aims to study the development of the Retail Industry in Albania and brand identity evolution through the usage and interaction in the social media platforms. The tremendous growth of the online world in the recent years created the proper structure for the development of the online customer concept. A great help at this regard, is strongly related with the power of the customer to easily adapt to the online social networks. As well the increase of the smartphone technology led to the evolution and time of using the online world and social media. All this factors, combined together present big opportunities of the retail business, to firstly present their self to the online customer, get in touch with them and at last to start developing their customer database even in the online world. This approach is directly relating with the concept of entrepreneurial marketing, to manage business resources in promoting in marketing medium and channel which provide higher revenues and customer return. The paper presents the case study of one of the biggest retailer in the consumer electronics sector and the way the brand identity is managed through social platforms.

Keywords: *Social Media, Brand Management, Information Technology, Entrepreneurial Marketing*

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Klodiana GORICA has graduated at the Faculty of Economy of the University of Tirana, in 1994. She holds grade "Doctor" in 2002, and title "Professor Associated" in 2011 and "Professor" in 2016, from the Faculty of Economy of the University of Tirana. She is editorial and board member in many International Scientific Journals and Conferences has participated in many national and international projects, is author and co-author of many articles published in international journals and conferences and text books too. She has published 2 monographs in English language (published by Springer and IEDC, Bled School of Management) and one in national language.

Commodity Taxation and Regulatory Competition

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Abstract

This paper studies theoretically and empirically competition in commodity taxation and product market regulation between trading partner countries. We present a two-country general equilibrium model in which destination-based commodity taxes finance public goods, and product market regulation affects both the number of firms in the market and product diversity. We provide empirical evidence based on data for 21 OECD countries over the 1990-2008 period. Our results suggest that commodity taxation and product market regulation are interdependent policies. We find absence of strategic interaction in commodity taxation between governments. Furthermore, we show that domestic regulation has a negative effect on domestic commodity taxation. Finally, we demonstrate that product market regulation is a strategic complementary policy.

Keywords: *Regulation, commodity tax, strategic interactions*

Economic freedom and FDIs inflows: An empirical analysis of South Eastern European Countries.

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Abstract

While Foreign Direct Investments- FDIs have been widely discussed in terms of push and pull factors and their economic contribution to host countries, the analysis on the relationship of FDIs with economic freedom of the host country has been very limited. Particularly, a similar analysis for South Eastern European countries is absent. Therefore the purpose of this paper is to investigate on the relationship between economic freedom and FDIs inflows of the recipient country.

Secondary data have been retrieved for European and South Eastern European countries for 2000-2013 to compute regression equations aiming at assessing the impact of economic freedom on the FDIs inflows. Economic Freedom, as a composite index, is computed based on five factors: size of government and taxation, private property and the rule of law, sound money, trade regulation and tariffs, regulation of business, labor and capital markets. As foreign investment decisions are subject of so many other factors, a

number of control variables have also been introduced. The findings will provide valuable information for discussion among researchers as well as for consideration for policy makers regarding FDIs promotion and attraction governmental policies.

Keywords: *FDIs, economic freedom, South East European countries*

The tendency of import of excise goods in Albania

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Abstract

The import of excise goods represents a trend in products fuel, coffee, tobacco and beer. The announcing increase of excise for some products in the fiscal package for 2014, influenced the behavior of economic operators that increased significantly the imports of these products during 2013. The source of data for this statistical survey was the Ministry of Finance. Data carried out the period of time 2000-2015, according to monthly values for each product. There exist some methods for reducing of canceling the effect due to random variation. Widely used techniques are "smoothing". These techniques, when properly applied, reveals more clearly the underlying trends. In order to benefit the right model, are being implemented several techniques as: Stationary Testing Process, Smoothing Techniques, Autoregressive Models. This is followed by a prediction by: Holt-Winters Forecasting Technique and Forecasting by the Z-Chart. Software used for the implementation of objective of this work is R and SPSS.

Keywords: *Import, Autoregressive Models, Trend, R & SPSS-software, Forecasting*

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Digital Single Market In Albania – An Important Tool For European Integration

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Abstract

The digital single market is a recent concept developed in the framework of the European Union initiatives to encourage use of internet and digital technologies to the advantage of peoples. This paper is trying to further develop this concept in the Albanian context, considering the establishment of a digital market in Albania. “On-line” products and services will enable an increased access and improved service to the benefit of customers under conditions of fair competition and personal data protection. Markets unification can be achieved within a platform encompassing the digitalization of banking, industrial, education, investment markets, etc. Several components are to be considered: digital infrastructure development, legislative changes to support and protect the electronic trade, e-governance and fiscal policy stimulating digital market. The opened discussion can stir a “national agenda for an open science” where all interested subjects may present digital policies and become actors in the digital market with unlimited opportunities and frontiers.

Keywords: “digital networks”, “digital market unification”, “innovative services on-line”, “growth potential”.

Dr. Ira Zoga (Gjika) *is a lecturer of “Operations and Strategic Management” in Albanian universities. She graduated from the University of Tirana in 1984 and has been involved in teaching different courses for around 30 years. She has also worked in upper management positions in private and public organizations. After receiving a doctoral degree in 1994, and years of experience in project*

management and running her own business, her main fields of academic interest include management, innovation, and entrepreneurship.

Dr. Nikollaq Pano is a lecturer of “Theories of Entrepreneurship” and “Establishment of New Businesses” and “Basics of Marketing” in several universities in Albania. He has a career of more than 30 years in teaching different courses on economic thought issues, marketing, promotion, etc. After graduating from the University of Tirana in 1982, he started lecturing on theories of economic thought that same year. Dr. Pano has been involved in his managerial career in Greek companies during the early 90s to continue with his own entrepreneurial activities. He has been a consultant for many new Albanian businesses in trade and services, especially in tourism, as well as in the field of marketing.

Competition levels in Albanian insurance market

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Abstract

Initially the Albanian insurance market was a state monopoly and later on, after '90 the market was opened for the private sector. New firms entered the industry and a new environment was created for the competition in the industry. In this paper we use the Normalized Herfindaal-Hirshman Index of concentration to estimate the level of competition among the firms in the insurance market. To measure the level of competition and their trends, we have obtained data for the period 1999-2014. An in-creasing trend in the level of competition (a decreasing trend in level of concentration) was observed in nonlife sector of Albanian insurance market, while in life sector of this market, the competition was at the same level for the period 2004-2014. Albanian insurance market is a market that is experiencing growth and certainly there is place for improvement, consolidation and constant monitoring.

Keywords: Insurance, HHI Index, Competition, Concentration, Trend

Eglantina ZYKA has graduated from the Faculty of Economy, University of Tirana, bachelor degree in finance (1999), MCS degree in finance (2006) and Phd degree in statistics (2011). From 2002 working as assistant professor of Statistics at the Faculty of Economy, from 2006 as lecturer of Statistics, from 2011 as Doctor, from 2015 as Associated Professor, at the department of Statistics and Applied Informatics, University of Tirana. Since 2004 she is lecturer of Social statistic at Faculty of Social Science, University of Tirana.

Elena MYFTARAJ (TOMORI) got her Bachelor degree at the Faculty of Economy, University of Tirana in Economics and Applied Statistics (2001), the MCS degree in Economics (2006) and the PhD degree in Statistics (2011). From 2015 she is Associated Professor in the department of Statistics and applied Informatics. She has been assistant lecturer (2002-2006) and lecturer of statistics since 2006, since 2004 she is lecturer of statistics at Faculty of Social Science and Faculty of History-Philology, University of Tirana.

e-Government and Public Policy

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Abstract

E-government is a word that is widely used nowadays and it's easy to be misdirected or misunderstanding with regard to its definition. A multitude of definitions from different types of sources are present. The term "electronic government" or "e-government" focuses on the use of new Information and Communication Technologies (ICTs) by governments as applied to support the full range of their functioning. E-democracy is technological adjuncts to a republic, i.e., the use of information technologies and communication technologies and strategies in political and governance processes. In some cases, the word is used to refer to anything political that involves the Internet. The process of E-democracy is carried out by technologies such as electronic mailing lists, peer-to-peer networks, collaborative software, wikis, Internet forums and blogs. One view is that the Internet has globalized politics and citizens more active like "shoppers" of political messages and "goods". However, the value of the Internet at improving democratic processes is heavily debated. Others believe that the Internet merely adds another avenue for the established powers, such as media moguls, major executives in multinational corporations and other affluent individuals, to extend their influence.

Keywords: *e-government, efficiency, effective, budget reduced, management.*

Anila GJONAJ has graduated the Faculty of Social Science, Political Science branch in 2008. She holds a MA diploma in Politics and Governance in the European Union from 2012 and she is Ph D Candidate at Tirana University, Faculty of Social Sciences, Political Science Branch From 2013. Anila had gone through many experience of work as Specialist of Communication and Information in 2007. Since 2009 she is an specialist of ID card and Biometric passport in enrolment and deliver department at Aleat shpk. For so many experiences in e-government now She is an expert of that field. But Mrs Gjonaj is also an assistant

professor At Tirana University in Political Science branch since 2016. She is the author of more than 5 journal articles in the field of software quality management, e-government and the economy growth. Her work focuses on the analysis e-government and the consequence in Albania.

Moving Towards Sustainable Consumption In Albania

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Abstract

Sustainable consumption and production (SCP) is one of the key components for achieving sustainable development. In order to change actual consumer patterns toward more sustainable patterns is important to analyze the main factors that affect consumer behavior. During the last years encouragement of sustainable production and consumption has been the focus of policy makers. However, still only a minority of consumers adopts sustainable consumption patterns. The purpose of this study is to analyze the main factors that determine consumption patterns in Albania. Primary data are collected through a questionnaire and analyzed using statistical analysis. The results confirm the theoretical framework, attitude, demographic variables, perceived consumers effectiveness are strongly related to consumer behavior. It is recommended that more effort should be put in these areas in attempting to switch through more sustainable patterns of consumption.

Keywords: *sustainable consumption. Sustainable development, consumer behavior*

Anita GUMENI (PhD Candidate) has graduated from University of Macedonia, Thessaloniki Greece in 2010 in Economic Sciences. Currently she is pursuing her PhD degree in Marketing Tourism at UT. She joined the faculty of UT in 2011 and served as a full time Assistant Professor in the Marketing Tourism Department, at the University of Tirana, at Saranda Branch. Her research interests focus on the sustainable development and environmental economies.

Ornela SHALARI (PhD) has graduated from University of Tirana, Albania, in 1998 with a B.S in Management. She received her PhD degree in Mathematics, Statistics & Applied Informatics from University of Tirana, in 2014. She joined the faculty of UT in 2007 as an adjunct lecturer in the Management Department and later in the Department of Mathematics, Statistics & Applied Informatics. She has been a full-time assistant professor of statistics at the Mathematics, Statistics & Applied Informatics Department, since 2012. Her research interests focus on the statistical analysis of the times series and the asymmetric processes in the Albanian economy.

Port of Saranda is a "Port Of Call"?

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Abstract

Cruise tourism is a luxury form of travel. Mediterranean area continues to be the dominant area for Europe. In relation to cruise ships, ports can act as "home port" or "port of call". Port of Saranda is a "port of call". The last four years have been made in this port more investments to create infrastructure suitable for its operation as a "port of call". Through descriptive and comparative analysis, using existing statistical data from the official secondary sources obtained by JSC the Port of Saranda, we have reached the conclusion that the Port of Saranda is a "port of call" in its initial stages, which must constantly be adapted to the growing demands of the global cruise industry.

Keywords: *Tourism, Cruise Industry, "Port of Call", Port of Saranda.*

Rakela THANO has graduated the Faculty of Economic in 1986. She holds a PhD diploma in Economics from 2014. Currently she is a pedagogue in the Department of Economics, Faculty of Economic, University of Tirana, Saranda Branch. She is the author of 18 journal articles in the field of tourism economics. Her work focuses on the analysis of the impacts of the tourism industry in the macroeconomic indicators.

Mirela UJKANI has graduated in 1999 from University of Tirana, Faculty of Economy. She holds a PhD diploma in Accounting from 2013. Currently she is a pedagogue in the Department of Accounting, Faculty of Economic, University of Tirana. Its work is focused in the field of accounting, auditing and analysis.

Some applications of New Pareto distribution

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Abstract

A common practice to analyze income data is to fit a given model to data and then compute all the inequality in-dices that appear useful as functions of the estimated shape parameters. In a sense, we choice a new probability density distribution called New Pareto Distribution which is proposed from

Bourguignon et al. [Bourguignon, M., Saulo, H., & Fernandez, R. N. (2016). A new Pareto-type distribution with applications in reliability and income data. *Physica A: Statistical Mechanics and its Applications*, 457, 166-175.] The aim of this paper is to estimate the parameters of new Pareto distribution. We will use some different classic and modern methods of estimations, namely method of maximum likelihood estimators, , method of least squares estimators, weighted least squares methods, Maximum product spacing estimates, Methods of minimum distances, method of Cramer-von-Misses and methods of Anderson-Darling.

Keywords: *Pareto distribution, new Pareto distribution.*

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The Vlora Focus On Marketing Of Tourist Destinations

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Abstract

According to the specific nature of tourism products and services, the marketing of destinations includes many features which are not shown in the company marketing in another industry. In contrast to physical products, a service product cannot be tested before it is purchased due to non-transparency. The customers must decide based on the information that they has and it carries a risk for. The decision making process is influenced by images. In this paper we are presenting a research which we have done at some of the Vlora hotels. The paper treats the problems and the view from stakeholders, businessmen and the consumers of the tourist services in the area. After we are treating the methodological approach and sample design we will treat the data analyses and the research results as well as a model designed regarding this study and the data collected. The paper will end by conclusions and recommendations.

Keywords: *tourism services, Social Media Marketing, Destination Marketing Organizations, data analyses*

PhD candidate Shkëlqim B. SINANAJ has graduated the Faculty of Economic in 2004. He holds a Master Second Level in Marketing from 2008 and he had gone through all didactic positions since 2004 when he joined the staff of the University "Ismael Qemali" Vlore, teaching assistant in 2004, lecturer from 2011, Vice Dean in 2013 until now. Currently he is main lecturer of Tourism and Marketing in the Department of Business at Faculty of Economy. His work focuses on the analysis of quality of tourism sciences and Marketing. He is author and co-author on some articles and conference papers and a many other research materials and projects.

Prof. Dr. Fatmir MEMAJ (1962) got his Bachelor degree at the Faculty of Economy, University of Tirana, (1985), the PhD in Economics (Nov 1996) and Associated Professor (May 2001). Since March 2007 he is full Professor at department of Statistics and Applied Informatics Faculty of Economy, University of Tirana. He has been assistant lecturer (1985-1991) and lecturer of statistics since 1991. Currently he is professor of statistics, demography and research methods and techniques. Also he is executive director of Albanian socio economic Think Tank - ASET (www.aset-al.com). Prof. Memaj is Member of International Association for Surveys Statisticians -IASS (2000), Member of Association of Balkan Statisticians, (2000) and Member of European Association of International Education – EAIE, (2011). He is author and co-author on 6 monographs, more than 60 articles, more than 80 conference papers and a lot of other research materials and projects.

E-Banking Service and its Effects on the Development of Banking Sector: Kosovo's Case

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Abstract

The financial system that banking and financial operators operate is constantly evolving. Based on the perspective of the client, internet is becoming part of our lives each day more. The gradual involvement of new technologies in the banking sector has enabled reduction of costs for customers and has increased the performance of the banking sector in general. Numerous factors such as competitive costs, improved customer services have driven banks and banking clients to evaluate more the new technologies such as electronic sales (e-commerce) and Internet Banking (e-banking) strategy. Internet Banking enables banks to offer a wide range of functionalities to their clients. It is a banking service that enables customers to perform online financial transactions 24 hours, 7 days a week, directly from their homes or offices in order to perform the banking operations they want. The services offered by e-banking are the most diverse. The purpose of this paper is to describe the usage of Internet Banking, description of

functionalities that it offers and the positive effects it brings to the relationship bank - client. There are taken the necessary information regarding the effects of its usage in the development of the banking sector in Kosovo through a survey conducted with commercial banks in Kosovo. Based on the results of the paper is seen that from banks perspective this service is considered as an appropriate way to attract existing customers and increase the number of new ones.

Keywords: *e-banking, banking sector, commercial banks, financial transaction, internet.*

Donjeta MORINA has graduated from the Faculty of business, University Haxhi Zeka in Peja, in 2013. She holds a MA degree in this University since January 2016, in Accounting and Finance field. She is the author of over 15 journals articles and presentations in International Conferences and Journals in Albania, Kosovo and Macedonia. Mainly of those papers have to do with finances field. Now she is preparing new works and projects for the future. She soon will start PhD studies in finance field.

Rate of return on supplementary social insurance scheme

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Abstract

The social insurance system in Albania is composed of three basic schemes: (i) mandatory scheme functioning on the "pay as you go" basis, (ii) voluntary scheme, protecting individuals who for specific reasons are not involved in the mandatory plan, and (iii) supplementary scheme, covering a specific category of individuals, who perform certain state functions and/or have academic titles. Regardless the classification, the supplementary scheme is a mandatory one. During 2015, Albanian government have revised the contribution rates for the supplementary scheme, as the scheme is suffering a deficit. The aim of this paper is to calculate the average rate of return on the contributions invested in this scheme, referring to the category of individuals having the "Professor" title. The calculations will be based on some actuarial assumptions. The data used in this paper will be of secondary type, based on the official statistics published by respective institutions.

Keywords: *social insurance, contribution, rate of return*

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The real impact of the basic interest rate in the financial system - Albania case

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Abstract

The interference of state institutions in the credit market is already a well-known phenomenon in the market economy from the impact that has on interest rates. The institution that aims to influence this market, which in this case is the Central Bank, uses several instruments among which the most widely used is the base interest rate, which is supposed to have an impact on most of the loan market, especially in the banking market. The fact has shown that its role and power were not the same in different countries. There are differences between developed economies and emerging economies, especially the economies of Eastern Europe. Developing countries like Albania suffer the lack of a financial consolidated market and also the lack of an organized securities market. The banking system is developed but the level of competition is questionable. It is easily arguable that banks tend to benefit from the movements of the base interest rate rather than follow its tendency symmetrically (same as in deposits and in loans). It is this connection between the base rate and interest rates in the banking market, which will be the focus of this paper. An example would be a financial market of a developing country like Albania. The aim is to measure the strength of this relationship and to draw conclusions that we believe are valid not only for Albania, but also for other developing countries with similar features to the functioning of the financial and banking sector.

Keywords: *Interest rate, Deposit rate, Loan rate, Spread of interest rates.*

Smart metering (cost benefit analysis of potential spread – case study Albania)

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Abstract

In most of the countries the decision regarding spread of smart meters is based on criteria's set by the Law and of course the results of cost benefit analysis (CBA). Clear steps to shift the electricity supply system from a centralized to a decentralized system have been made, and the transformation of the energy sector is taking shape in Albania. While in the past energy flowed in only one direction and information about these flows was highly limited, the decentralized energy supply system of the future is characterized by a two way flow of information and energy. Overall, these changes are especially increasing the requirements for the measurement and communication technologies as well as the data processing. This paper will try to analyze some of the projected cost elements of the CBA and the change in customer behaviors (possible benefits) by the results of Pilot Projects in smart meters implementation.

Corporate Social Responsibility: In search of an inclusive definition

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Abstract

In recent years more and more the term Corporate Social Responsibility (CSR) has entered the strategic plan of the business, but even in the "vocabulary" of consumers. Indeed, in modern economic times, formed as a new competitive field of companies. CSR is one of the most dynamic and demanding sectors for the modern enterprise. Indicates a balanced response to the economic, social and environmental impact of running a business and is based on the triad of economic growth, sustainability and social cohesion. The recognition of the modern societies of the need for balanced and sustainable development and fundamental that changes this implies for how organized and businesses operate the main reason for the growth and spread of the CSR concept. In recent years the world's largest companies have begun to move away from traditional notions which limited their social role merely to donations for charitable purposes, sponsorships of events and basic welfare measures for workers and gradually adopt a systematic and strategic approach management of their CSR, both internally and in the external environment.

Keywords: corporate social responsibility, stakeholders, stakeholders' theory, innovations, strategy

Veronika Kallanxhi has graduated at Department of Management and Business Administration at Athens University of economics and Business (2002-2006). Currently she is pedagogue at Saranda Branch, Department of Management, Faculty of Economics, and University of Tirana. She is candidate for the title of Doctor of Science PhD. The main topics of interests are: corporate social responsibility, corporate governance, business ethics, leadership and tourism. She is the author of 7 scientific articles in economics and management.

Andrea Koxhaj has graduated at Economics Faculty of University of Tirana (1987). Currently he is professor at Department of Management, Faculty of Economics, and University of Tirana. The main topics of interests are: leadership, management of communication, corporate governance etc. He is a lecturer in the subject of business management and public administration. He is the author of a lot of scientific articles and international conferences in economics and management.

The Problems Faced by the Strategies in Public Organizations

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Abstract

Strategic planning is an action-oriented type of planning that is useful only if it is carefully linked to implementation – and this is often where the process breaks down (Poister and Streib, 2005). Public managers may fail to link their strategic planning efforts to other critical decisionmaking processes. Public organizations should undertake strategies to meet their missions, but in the long road they face a myriad of challenges that threaten the fulfillment of this mission, or implementing successful strategies in accordance with this mission. The objectives of this article are:

1. To identify the challenges facing the formulation of strategy
2. To identify the challenges facing the implementation of strategy in public organizations
3. To identify the challenges facing the assessment of the strategy in public organizations

The methodology of this paper, will be based on primary research and secondary research. Secondary search, will focus on a rich literature in the field of strategic planning of public organizations, and the challenges these organizations face. The primary research, will be based on a qualitative

research, which will aim the identification of challenges, in the process of choosing the strategy, implementation strategy and its assessment.

Keywords: *public organization, strategy challenges, role of information system, role of financial and human resource*

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Banking Ombudsman

Arjeta VOKSHI¹, Mimi KODHELI²

Abstract

One of the lessons of the financial crises of 2009 is the necessity to have well established and professional supervisory institutions. The Albanian financial system does not have all the institutions or bodies necessary to have a better transmission of central bank decisions. The most important missing institutions are Stock exchange market, banking ombudsman, some types of financial intermediaries and the respective supervisory bodies. Banking system is the most developed segment of the financial system. With the development of this system there is need to resolve the conflicts or the complaints that the consumer have in specific cases or for specific products offered from the banks. Currently, the network of consumer protection is weak. Banking Ombudsman does not exist in Albania. With the development of the products offered from the banking sector, having this body is a necessity. Through this article we are going to explain what should be done to establish this body, the advantages and disadvantages of having it and give some example of conflicts that would be resolved from this body.

Keywords: *banking system, consumer protection, banking ombudsman*

Mrs. Mimi KODHELI is Doctorate in Economic Science at Faculty of Economy, University of Tirana, and at University of Verona, Italy. She has a master degree in Public Administration by the Lincoln University, Nebraska, USA, in cooperation with University of Tirana, since 2000, as well as graduated by the University of Tirana, Faculty of Economy in 1986. She has studied in various fields such as: international markets, bond and assets, labor and investment markets, trainings on small and medium enterprises and banking management. She has participated in a programme of the U.S. State Department, "Women in Politics", and in the "National Security Policy" programme of the Marshall European Centre for

Security Studies. Mrs. Mimi Kodheli, since September 2013, is Minister of Defence of the Republic of Albania.

What do Albanian Researchers Need?

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Abstract

Research and development plays a critical role in the innovation process. Every day we experience how innovation has facilitated, improved and enhanced the quality of our lives. Our country, Albania, across its long process of "breaking down" borders and membership in the European Union, has the necessity of enhancing and strengthening the role of research and development in society. Beyond the fact that as a country aspiring to EU membership, Albania must meet the criteria and objectives set by the EU in terms of research and development within the Lisbon Strategy, the establishment of research and development at the forefront of economic development will have a huge positive impact not only economically, but also socially. As in every other aspect of social and economic life, the period of political transition created a gap in the field of research and development, reinforced by the immigration of a significant number of professors, academics, people who were a factor in the research and development field. Despite the fact that in the last decade, our country has undertaken a set of strategies and policies to promote research and development, the budget dedicated to the research and development in Albania does not exceed 0.18%, marking the lowest level of the research and development expenditure in Europe. According to a World Bank study, Albania has 245 researchers per million population, statistics that constitutes less than 10% of researchers per million population in the EU. In such conditions, the two main issues facing the empowerment of research and development in our country are 1) increasing the financial support for research and development and 2) the creation, development, promotion and retention of human capital and talents. In our opinion, the basis for promoting and strengthening research and development in the country is through cooperation and independence between research and development funding institutions and persons that are part of the research process. Institutions responsible for the research and development activities, whether public or private, national or international, universities, research centers, must perceive, besides the theoretical aspect, a real impact of research on the economy and society in order to be able to increase the budget dedicated for research and

development. Orienting the process of research and development towards the needs of the development of economy and society, institutions will be able to make a more objective selection of the personnel engaged in research and will invest more in developing and retaining human capital, creating better working conditions and better infrastructure to pursue researches, theoretically and practically. However, the role of such institutions should remain within the limits of supporting and creating opportunities for the development of the research process, without affecting the nature or quality of scientific research. Another important factor is the increasing of cross-sectoral cooperation in the field of research, which would increase the exchange of information, experience and best practices between the protagonists of the field, having as result the improvement of the whole process. Every modern society vision is the establishment of research and development at the forefront of economic, social and environmental development. It is the right and duty of the responsible institutions, but also educated individuals to contribute to the promotion of scientific research as a fundamental element of a society that aspires to develop, improve and integrate within the European community.

Keywords: *scientific research, financial support, research and development, research centers*

The Impact Of Social Media In Brand Equity And Purchase Intention

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Abstract

Consumers' life have changed tremendously due to social media influences in how they communicate with others, how, when and where they shop and in their decision making process. In recent years social networking sites (SNS) have increased in popularity. Facebook and twitter are the kings of this type of platforms, having the largest communities. Understanding how brands should operate and maintain brand equity on social media is very important for contemporary marketing researchers and managers. Nowadays, the product differentiation is done on how to give information to the consumer, to interact in a high level natural way: social life. The relevance of the research is based on the importance of the generation of creative ways of

being close to the consumer to enhance brand equity and stimulate purchase intention. Data were collected through questionnaires. Results show that social media has a positive impact on brand equity and consumer's purchase intention.

Keywords: *social media, brand equity, organization communication, purchase intention*

Business taxes and economic implications

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Abstract

Taxes and fees paid by businesses are important for the impact they have on their finances. Corporate income tax is a direct tax that burdens on business profits. Some businesses succeed in passing their tax obligations to client, individuals or other companies. However, there is a tax liability that businesses cannot pass nor is not sure how liability can pass to customers, employees, etc...Business firms deduct from their income the costs incurred, and pay tax on the profit achieved. If each of the components included in the calculation of profit will change, income tax will change. Increased spending will reduce profits and spending cuts would increase it. Income tax would vary depending on the change of profit. Consequently, businesses can try to influence or change the numbers of income and expenses. This paper will focus on the impact of changing the rate of income tax in the state revenue and expenditure items like wages and vice versa.

Keywords: *Corporate income tax, profit, wages, state revenue*

Prof. As. Dr. Etleva BAJRAMI, graduated in finance at the Faculty of Economy, University of Tirana, in 2002. In 2009 she was given scientific degree "PHD" in Finance. She works at Faculty of Economy, University of Tirana since 2003. She is pedagogue in the Department of Finance. She is author of a university book and some lectures. She has participated in many national and international conferences. She has published some papers in scientific journals.

Importance of models and special techniques in algorithmic service stage following data warehousing in financial enterprise

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Abstract

Considering the importance of each aspect of chain management in data warehousing, we select in this work the importance of integration of different algorithms and techniques to improve the algorithmic service in the chain of data management processes. By the harmonization of two analytic techniques for some financial time data series, we remark on the reduced time of end user understanding of their behavior and so in the gateway of information gathering from elaborated common economic data.

Keywords: data warehousing, data mining, algorithm

Erada VUKA. PhD student in Informatics is part time lecturer in the Faculty of Natural Sciences, University of Tirana. She worked and published in the special techniques of time series analysis with application for complex physical systems. Now is working in the data management, data housing and data mining.

Re-Engineering Of Public Service Delivery: A Key Component Of The Public Service Delivery Reform

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Abstract

Increase of the efficiency of public service delivery in order to provide a better public service for citizens and business is in the focus of public administration through strategies for public service reform and innovation. Governments in different countries around the world are facing a common set of challenges in order to increase the satisfaction of citizens and businesses. Innovation and re-engineering of the processes in order to increase efficiency reduce the time of public service delivery and the cost of investments is a challenge today. Some-times the innovation through ICT is difficult through the resistance from bureaucracy and traditional way of behaviour from different actors involved. This paper would evaluate current

situation in public service delivery and main factors which have impact in better service delivery which will lead towards time and costs reduction for service delivery.

Keywords: *public service delivery, re- engineering, ICT, innovation good governance;*

Vilma TOMCO has graduated the Faculty of Natural Sciences, Tirana University in 1989. She holds a post graduation master diploma in science and is actually enrolled in PhD school in the Faculty of Economic. She has joined the Faculty of Economic staff as teaching assistant since 1998 on Informatics subjects. She has a long experience in the telecommunication fields contributing to build up and managing several informatics system in Albtelecom and Eagle Mobile companies. Actually she is Director of Department of Innovation and GoodGovernance contributing on the public services reform.

Irena MALOLLI was graduated as Electronic Engineer in the Faculty of Electrical Engineering in Tirana Polytechnic University in 1991. She holds a Master degree in Telecommunication and Information Engineering, also the MBA Master degree. Actually she is the PhD student in the Faculty of Economic. She has a long experience in the telecommunication and ICT field contributing in the regulatory and policy making issues and also in the development of e-government and ICT strategy and legislation. She is also a part time lecturer in the University of Tirana on MIS and electronic subjects. Actually she is the Director of Unit of Electronic communication, Postal and Integration in the Department of Innovation and GoodGovernance.

The Relationship Between Profitability And Liquidity Of Commercial Banks In Albania

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Abstract

This study aims at investigating the relationship in short and medium term between liquidity and profitability of commercial banks in Albania. The population of the study is comprised of all 16 commercial banks in Albania operating in the years 2010 to 2014. The study involves secondary data collection from the audited financial statements. The relationship between liquidity and profitability was studied with the help of statistical procedures using statistical correlations to verify the relationship in short term and a two-dimensional analysis was used to verify the relationship in medium term. The results showed that there is a positive relationship in short and

medium term between profit-ability and liquidity of commercial banks in Albania.

Keywords: *liquidity, profitability, commercial banks, financial analysis, finance manager*

Nevila BACI has graduated from the Faculty of Economy, University of Tirana, in 1987. She holds a PhD diploma in E-government and she had gone through different didactic positions since 1987 until now from teaching assistant to assistant professor in 2011. She has research experience and is co-author of 7 research projects in international level. Currently she is an assistant professor of Informatics within the Department of Statistics and Applied Informatics at the Faculty of Economy, University of Tirana. She is the author of over 20 articles and 7 International Conference Proceedings ISTI-2012 presentations in International Conferences and Journals on Albania, Macedonia, Montenegro, The Czech Republic and USA. Her work focuses on Computer Science, Management Information Systems, E-commerce and Database Systems.

Erjon ZOTO has graduated from the Faculty of Economy, University of Tirana, in 2008. He holds a PhD diploma in Information Systems and currently holds the position of a full-time lecturer of Informatics and related subjects within the Department of Statistics and Applied Informatics at the Faculty of Economy, University of Tirana. He is the author of over 20 journal articles and presentations in International Conferences and Journals in Albania, Croatia, Germany, Kosovo, Macedonia, The Czech Republic and USA in the field of ICT, Information Systems, Multimedia, E-commerce and Data Mining. His current work focuses on the analysis of the impact of data mining techniques and multimedia applications in the business processes and e-commerce, concerning the latest developments in the fields mentioned above.

Eglina PJETERNIKAJ has graduated from the Faculty of Economy, University of Tirana, in 2014. She currently holds an MSc Diploma in Accounting and Auditing at the Faculty of Economy, University of Tirana. Her work focuses on accounting and auditing of financial systems.

Digital Platforms In University Entrepreneurship

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Abstract

This paper approaches the opportunities to establish digital platforms by the universities in order to push the Albanian university education towards the closest collaboration with entrepreneurship and market. After the ‘business incubators’ wave, the digital platforms are becoming the main stimulating tool of innovation and entrepreneurial spirit for the young people. Following

the European Directive “Rethinking Education Strategy” several Albanian universities are considering new methods for encouraging university ventures. The digital platforms are notable ones, successfully used by many foreign universities. A combined platform called “Start Up & Re start” is more in details examined in this study and the prototype is analyzed. The platform enables the stimulation of new business ideas, tries to evaluate their success probability, intends to find associates that support such ideas and assist with business plan drawing. The expectations of this study are to enable establishment of digital platforms where universities, private businesses, banks, students and lecturers are involved.

Keywords: “digital platforms”, “business ecosystem in the education process”, “digital incubator for small businesses”.

Dr. Nikollaq Pano is a lecturer of “Theories of Entrepreneurship” and “Establishment of New Businesses” and “Basics of Marketing” in several universities in Albania. He has a career of more than 30 years in teaching different courses on economic thought issues, marketing, promotion, etc. After graduating from the University of Tirana in 1982, he started lecturing on theories of economic thought that same year. Dr. Pano has been involved in his managerial career in Greek companies during the early 90s to continue with his own entrepreneurial activities. He has been a consultant for many new Albanian businesses in trade and services, especially in tourism, as well as in the field of marketing.

Dr. Ira Zoga (Gjika) is a lecturer of “Operations and Strategic Management” in Albanian universities. She graduated from the University of Tirana in 1984 and has been involved in teaching different courses for around 30 years. She has also worked in upper management positions in private and public organizations. After receiving a doctoral degree in 1994, and years of experience in project management and running her own business, her main fields of academic interest include management, innovation, and entrepreneurship.

Capital Asset Pricing Model calculation using Python language programming

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Abstract

The aim of this paper stands using the Python code for calculating Capital Asset Pricing Model (CAPM) and creating a regression model. The most important component in calculating the required return to shareholders from CAPM is beta's coefficient based on Python language programming which

can help portfolio managers to have better view on their portfolios. It is very important to understand that beta is a relative measure of risk, and not an absolute measure of risk. We have used data from Yahoo Finance for Apple company (AAPL) and Standard and Poor 500 as a market benchmark (SPY) for constructing and calculating beta's and volatility.

Keywords: CAPM, Beta's coefficient, Python language

Ardit GJECI has earned the first degree and MSc. in Finance and Accounting at Agricultural University of Tirana. After finishing his studies he worked as a Credit Risk officer at Risk Management Department, Alpha Bank Albania and also he worked as assistant professor at Agricultural University of Tirana at Finance and Accounting Department teaching the module "Financial Market and Institutions". After that, he started PhD studies at University of Ljubljana, Faculty of Economics and he is strongly focused since the beginning of his professional experience on implementing desk researches and in organizing and performing field surveys, including the subsequent data and information processing of qualitative and quantitative data. He's research area is focus on Credit Risk Management/Measurement, Bank Assets Quality and Macroeconomic factors.

Ervis BEJKO has earned the Bachelor degree (2002-2006) and MSc.(2008-2010) in Finance and Accounting at Faculty of Economy in the University of Tirana. After finishing the Bachelor studies he worked in different positions in Alpha Bank Albania. Starting from October 2012 has been working in the "Aleksander Moisiu" University of Durres and Agricultural University of Tirana, teaching the modules "Financial Market and Institutions", "Corporate Finance" and "Risk Management". On 27.04.2016 he earned his PhD Degree in Finance from the Agricultural University of Tirana.

The Drivers of Economic Growth in Albania: Decomposition from the Sectorial and Factor Side

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Abstract

The purpose of this article is to analyze the profile of the economic growth in Albania during 2000-2015. Our economy has been growing on average terms, but not uniformly and in a sustainable profile. Economic growth has significantly slowed since the global financial crisis. A considerable part of this reduction was due to the slowing of the potential growth. The main empirical work of this study focuses on the growth decomposition based on the production factors side approach to a better understanding the drivers of growth. The main conclusion is that during and post-crisis periods the trends

of all production factors moved downward, but the most sensitive were the productivity and employment. Even though, the crisis has reduced the initiative of the private sector to invest in innovation, technology, education and research, it still remains a challenge of structural reforms to improve the trends of productivity and employment.

Keywords: *Trends, Growth Accounting, Production Factors, TFP*

The noise pollution in Albania: A regression analysis through Matlab

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Abstract

The aim of this paper is to provide analytical, assessments of the level of noise pollution in Tirana, Albania. The methodology used, consists in sampling during three days in the city of Tirana on its 14 key areas. The time for the data to be sampled is selected in such a way as to reflect more accurately the situation of noise pollution in Tirana. Specifically, schedules for selected samples were taken at 800, 1300 and 1900. Then these data are processed through the linear regression method whose algorithm is formulated through Matlab software. Through the simulation, the respective straight lines of the linear regression have been extracted, for the three timetables during which samples of the amplitude in dB of the signals of the noise level are taken. Finally, these straight lines are shown graphically and also the linear equations as well as the respective determination coefficients are treated.

Keywords: *noise pollution, linear regression, sampling, Matlab, simulation*

Jozef Bushati, currently lecturer of Education Technology at the University of Shkodra “Luigj Gurakuqi” and holds the title of Associated Professor. After university studies for Teacher of Math & Physic, he has finished MBA Program. He has performed several training and specialization in the field of Advance Training Management Programs, MIS, Education, ICT applications, in Europe and USA. Also he defended his Doctorate at Faculty of Economy of U.T in the field of ICT applications in the economy (E commerce). Have participated at Research projects as: Great IST, Albanian IST Market, SCORE Project, ICT Research and

Development". SEE INNOVATION. He has published several dozen articles in international scientific conferences in OECD countries and beyond, is member of boards of some of them.

Edmond Hajrizi holds the title Professor : Mechatronics and in Intelligent Systems, Computer Science and Management; Research Area: Systems Design and Management (Education, Business, Entrepreneurship and Innovation, Regional Development, Quality and Process Management, Information Systems, Mechatronics and Robotics); Professions: Entrepreneur, Teacher, Researcher, Innovator, Trainer, Consulter/ Adviser / Expert, Assessor, Publisher, Member of dif. Professional and Scientific Councils; Founder, Owner and President of UBT, IEME, KASIM, KA-CASE, Quality Kosova, IPC; Academic Staff of Vienna University of Technology; Research Follower at City University London; Visiting Scholar at Warsaw University; World Bank Expert for Research and Innovation; Accredited First IPMA Assessor for Project Management (A, B, C, D); Member of GA of IFAC, EUROSIM, IPMA, EOQ, AESOP, IEEE, etc., representing Kosovo;

Virtyt Lesha is electronics engineer specialized in digital signal and image processing and automatic control systems through Matlab. He has four years' experience in Matlab programming. This experience is reflected in the fact that he has worked in an private company where he has developed digital signal processing algorithms for noise reduction in hearing aids. Finally, part of his experience is scientific research that consists in the fact that of publishing several scientific articles in international conferences in Albania, Montenegro, Croatia, Slovak Republic and Germany

Rafail Prodani is graduated in Mathematics in 1995, University of Tirana, Faculty of Natural Sciences. He has finished Master of Science degree, in "Education and Training System Design" University of Twente, Netherlands, year 1998. Master of Science in Bulgaria, for "Computer Science". Near University of Bllagojevgrad, in year 2005. In 2010 he finished the PHD program,. He has several publications in the field of Education Technology and Internet Technologies like: "Elements of Theory of Instructional Design in Net", Bulletin Faculty of Natural Sciences, University of Tirana, 2008. "An attempt to evaluate network and society access in Korca city", AlbShkenca Tetove 2009 "Network access. Actual situation and tendencies in southeastern Albania" 2009 University of "Neofit Rilski" Bllagojevgrad, Faculty of Natural Sciences.

Education In Modelling And Simulation: Mathematical Formulation And Case Studies

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Abstract

This paper deals with the conceptual structure for courses in modelling and simulation. An important part in planning modelling and simulation courses is a good combination of theory and application. In order to im-part all aspects student should also be motivated to implement a model their selves. It is not enough to only attend lectures about it but also develop a model.

Keywords: *Modelling and Simulation, Mathematics, Education, E-Learning*

Stefanie WINKLER. She passed her bachelor study in technical mathematics in 2012 and her master study in 2014. Currently she is working on her PhD thesis in the field of mathematical modelling and Simulation. Her fields of activity include partial differential equation simulation, numerical aspects of simulation and system simulation. Since 2014 she is assistant professor in the research group of Mathematical Modelling and Simulation at the Institute for Analysis and Scientific Computing at Vienna University of Technology.

Modelling a pervasive computing system for blood donations: Strategies and challenges

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Abstract

The article strives to propose a solution and also to propound some of the major issues related to blood banks and blood donations, addressing them by modeling a Geographic Information System over blood banks. This solution would help the society in general and the individuals in need for blood, specifically. Our aim is to present a software solution that will be pervasive and flexible. We are in a situation that all the involved parties experience the lack of coherence in information that slows this health service system, the integration of the whole blood providing institutions in our country, and also the end-users that provide or require blood. The situation is even more critical in other cities besides the capital, where the obstacles in the management of the system are even larger. We are aiming for a system which firstly offers simplicity and ease of access, presenting two principal ways in addressing the issues: creating a website and a smart phone application. And regarding the process of modeling the medical data of these institutions, we also have to be conscious that we are in front of a task that needs analyzing and translation of the issues and requirements in a systematic software engineering procedure.

Keywords: *pervasive computing systems, Model View Controller, Unified Modeling Language, Android platform, BTS (Blood Transfusion System) , BDS (Blood Donation System)*

Anisa VURMO has graduated the Faculty of Computer Sciences in 2013. She holds a Master of Science diploma in Computer Sciences with high results. She works as a lecturer at the University of Elbasan, Faculty of Natural Sciences, Department of Informatics. She is the author of a science article on December 2015 in the field of the most recent software innovations. Her focus is on developing and engineering software applications.

Erind BEDALLI is a lecturer in the Department of Informatics at University of Elbasan, where he has been a faculty member since 2008. He has received his B.Sc. degree in Computer Engineering from Hacettepe University, Ankara, and his M.Sc. degree in Informatics from University of Tirana. He completed his doctoral studies in the field of fuzzy logic and exploratory data analysis at University of Tirana in 2014. His research experience and interests are mainly in the areas of: Fuzzy Logic, Data Mining, Artificial Intelligence, Expert Systems, Large Scale Computing and Information Theory.

The Use of Parametric Distributions and Empirical Mode Decomposition to analyze the exchange rate ALL/EURO

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Abstract

The Empirical Mode Decomposition analysis is applied herein in the study of the return in ALL/EURO exchange rates. Considering each Intrinsic Mode Functions (IMF) and selecting the one that probably represent a real signal, we analyze possible regimes that are estimated by the identification of stable trends or stable distribution. We distinguish some differences on near to cyclic behavior but qualitatively the edges of them have been identified. Possible forecasting elements could be considered so far, but principally we focus our attention in posterior analysis. The main conclusion consists in methodical analysis aspect, supporting the idea that this technique, harmonized with other dealing with financial series could be an effective tool in the case of very rare data series, typical in our case.

Keywords: *exchange rate, q-distribution, EMD, financial series*

Sandër KOVAÇI, hold a PhD in Mathematics from Polytechnic University of Tirana, Department of Mathematical Engineering, since 2010, and a Master of Science Degree from University of Trieste, Center of Excellence of Telegeomatics,

in Cartography and Geographical Information Systems - GIS (2004), Postgraduate studies at University of Pisa (Italy), Imperial College London (UK), etc. University Degree in Applied Mathematics. University of Tirana (1994). 14 years of teaching experience in University. Currently he is teaching Mathematics at Polytechnic University of Tirana. Fields of interest: Calculus, ANN. Spatial Data Analysis, Optimization and Dynamic Systems.

Efficient Clustering Algorithm For Large Datasets Using Data Mining

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Abstract

In large datasets finding useful and meaningful patterns recently is on the focus of researchers. The most widely used problem in this area is the identification of clusters in a multi-dimensional dataset. In the field of data mining the clustering technique is a very useful technique for discovering similar groups and identifying interesting relationship in the underlying data. The traditional clustering algorithms are dealing with spherical shapes of data and have limitations in treating outliers. In this paper we propose the use of a new clustering algorithm called CURE. This algorithm is more robust to outliers, and can be used with clusters that do not have spherical shape. Also it can be used even when the variance in size is wide. The algorithm itself represents each cluster by a certain fixed number of points that are generated by selecting well scattered points from the cluster and then shrinking them toward the center of the cluster by a specified fraction. In this paper we have done some experiments with the data coming from Albanian and Housing Population 2011 comparing K-Means algorithm results with CURE results. The results confirm that the quality of clusters produced by CURE is much better than those found by existing algorithms such as K-Means. CURE can identify clusters having non-spherical shapes and wide variances in size with the help of well scattered representative points and centroid shrinking and can handle large databases by employing a combination of random sampling and partitioning

Keywords: *Clustering, data mining, K-Means, CURE*

Data Analysis of the Public E-Procurement System on Macedonia

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Abstract

This research was conducted with the aim to analyze and open public procurement data in Macedonia. In the scope of this paper we present several aspects of data gathering, mining, and visualization applied for the purpose of opening public procurement data in Macedonia. The main accent of this paper is set to the open data visualization as a tool that will help data journalists. The paper further discusses our approach towards data collection from the governmental procurement portal, cleaning techniques, analysis and presentation of results to the general audience.

Keywords: *Open Data, transparency, Open Government Data, Open Government Partnership, text mining, data mining, data visualization, web crawling*

Adriana MIJUSHKOVIC, graduate student, currently writing her master thesis - “Support-ing data-driven journalism through analysis of the public e-procurement system in Macedonia” and at the same time she has been working as a web developer and data analyst at the organization Center for Civil Communications. During her experience as a web developer and data analyst, she has been focused on data mining, data analysis and visualization by using different programming languages such as Python, Scrapy, C#, SQL and parallelly she has been using different software tools for data visualization such as: GoogleCharts, Tableau, Infogr.am and D3.js. Among several professional projects she has been involved in are the development of the public e-procurement system – *openprocurement.mk*, development of visualization stories for the website *prizma.birn.eu* and several research projects related to privacy and security issues of cloud systems. The results of the research about users’ awareness regarding privacy and security issues has been published at the international conference proceedings of *Elearning’15*.

Visar SHEHU, PhD, is an assistant professor at the Contemporary Sciences and Technologies department of South East European University (SEEU) in Tetovo, Macedonia. He has a Master degree in Computer Science from Purdue University and a Bachelor degree in Computer Science from SEE University. His research focuses on data mining and data visualization technologies. During his experience as a lecturer in SEEU, he has been teaching courses from his field of study such as database management systems, data mining, data visualization etc. He has been also working independently in developing and leading the development of commercial systems employing a range of technologies (web, mobile or desktop applications). Among projects he has been involved in developing are ERP solutions for small and medium enterprises, native and cross platform mobile applications, Learning Management Systems, application of business intelligence in practical applications etc.

Adrian BESIMI, PhD, is an assistant professor and an acting Dean at the Contemporary Sciences and Technologies department of South East European University (SEEU) in Tetovo. He has a Master degree in Computer Science from Purdue University and a Bachelor degree in Computer Science from SEE University. His interests are mainly related with application of IT in business and other organizations, such as: Business Information Systems, e-Commerce, Web and Mobile Solutions, Software Oriented Architectures, Data Mining and Business Intelligence and similar. He has more than 10 years experience as a software developer in desktop, windows and mobile applications. Design and development of useful applications for business has been carried out through these years, covering various solutions, ranging from simple Mobile Applications and Accounting software for SMEs up to Web portal and Content Management System, Learning Management System, e-Commerce solutions, etc.

An investigation on real time monitoring of speculative bubbles in U.S. stock markets

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Abstract

The motivation for this analysis is originated by recent developments in equity prices; in his recent book 'Irrational Exuberance', Robert J. Shiller [18] maintains that there is possibly a speculative bubble forming in the U.S. stock markets in the aftermath of the 2007-2008 crises. These arguments seem to be indeed supported by new records with regards to the magnitude of nominal stock prices. Perhaps the most challenging problem when it comes to building empirical models that test for Speculative Bubbles has, until recently, remained the formulation of tests that can monitor the bubble formation in real time contrary to classical ex-post investigation. It is therefore with regards to these two questions and how they relate to real time monitoring for speculative bubbles that this research will be primarily concerned. A recent methodology developed by Philips et. al. [14][15] is applied that enables real time monitoring for price exuberance that cannot be explained by the fundamentals of the market in NASDAQ and S&P500 time series.

Keywords: *Differential Equations, Speculative Bubbles, Periodically Collapsing Bubbles, US stock markets*

Pranvera MULLA (PHD) has graduated from University 'Eqerem Cabej', Albania, in 1987 in Mathematics and Physics. She completed her masters degree in 'Numerical Analysis' from University of Tirana in 2008. In 2014 she received her PhD degree in Operational Research from University of Tirana. She has been a full-time assistant professor of Mathematics at the Economic Department, at the University of Tirana, at the Saranda Branch.

Ornela SHALARI (PhD) has graduated from University of Tirana, Albania, in 1998 with a B.S in Management. She received her PhD degree in Mathematics, Statistics & Applied Informatics from University of Tirana, in 2014. She joined the faculty of UT in 2007 as an adjunct lecturer in the Management Department and later in the Department of Mathematics, Statistics & Applied Informatics. She has been a full-time assistant professor of statistics at the Mathematics, Statistics & Applied Informatics Department, since 2012. Her research interests focus on the statistical analysis of the times series and the asymmetric processes in the Albanian economy.

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Demand and Supply in Secondary Education

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Abstract

The enrollment of students in secondary school in Albania continues to be low, far from the level of Europe. The article aim to analyze the explanatory factors of non enrollment of the young people in secondary education. The data of analysis have been taken from the Living Standards Measurement Survey, LSMS 2012 for students age 15-18 years old that have finished the basic education (nine years). To assess the relation between (not) school enrollment and explanatory factors, it was used descriptive statistics and logistic regression. The results of the models show that non enrollment of students in secondary school is different, not only geographically, but also affected by the economic situation of the students households, educational infrastructure, education of parents, household size, lack of parental in a household, all of them considered as a risk factors. The difference in the

situation of the education may be supported with a territorial approach, with specific local and national policies to stimulate demand to enter into school and to provide modern education, particularly policies in favor of children which family have economic difficulties.

Keywords: *secondary education, demand, supply, risk factors*

Ruzhdië Bici has been graduated in the Faculty of Economic, Economics Department in 2007. She has completed Master's Degree in "European Economic Studies" at University of Tirana, Albania, December 2010. At present, she is PhD candidate at the same Economics Department of the Faculty of Economy. From 2007, she is working as a specialist in Living Conditions Statistics in the Albanian Institute of Statistics. She holds a part time job as Assistant Lecturer at the Faculty of Economics teaching Applied Statistics, Introduction to Economics and Microeconomy. In the course of her academic working life she has carried out several research studies, mainly in micro level and related with economic development using different statistical software and econometric analyses.

Bukuri Dumani is a lecturer of Statistics in the Department of Statistics and Applied Informatics at the Faculty of Economy at the University of Tirana. She has completed university studies in 1974 in the Faculty of Economy, University of Tirana and holds the title of Professor Doctor. She is laureate of the third cycle degree at the University Lovain-La-Neuve, Belgium, estimated "Grande Distinction". In 1998 she has been Director of Unit of Population Studies and in the 2001-2008 has been Head of the Department of Statistics at the Faculty of Economy. She was a member of the Central Commission for Population and Housing Censuses in Albania, 2001, 2011. She has collaborated with the Institute of Statistics for the census, regional statistics and population projections. Field research is statistical analysis in interconnections and interdependencies of economic, social and demographic. She is the author of the national and international publications as monographs, textbooks, articles and other studies.

Use of administrative data sources as a substitute of Statistical Surveys in Albania

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Abstract

Statistical surveys offer the possibility of measuring the progress of development of a country through economic and social indicators in short periods of time. But carrying out surveys deals with time limit data availability, high cost and sometimes with incorrect answers; this problem is also encountered in other countries. Best practices today in some European countries and further indicate the possibility of replacing totally or partially

(taking into consideration economic activity and size of enterprises) and using effectively other alternative sources such as administrative sources. The administrative sources usually are used as supplementary sources or for treatment of no response. How possible is to use administrative sources in Albania as substitutes of statistical surveys in order to obtain the necessary information in volume, quality and in time. Administrative data on Tax value added declaration can facilitate the replacement of monthly or quarterly statistical surveys on small and medium enterprises by statistical estimates. What are the problems faced in using administrative sources? What are the best methods to be used for using them in efficient way?

Keywords: *statistical survey; administrative source, value added tax, statistical evaluation.*

Implementing a simulation model for the evaluation of BGP updates impact on real-time applications

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Abstract

Border gateway protocol (BGP) is the actual routing inter-domain protocol in the internet. The size, heterogeneity and changeability that characterize today's internet put always increasing requirements on bgp performance. The research community has already reported the unwanted characteristics of bgp like low integrity and slow convergence through theoretical analyzes and empirical measurements. Simulations allow for more realistic and flexible experiments than the theoretical approach and also lower costs than the measurements in real life environments. The first part of this paper describes theoretically the characteristics and the problems related to bgp and also expectations of the today internet users to real time applications (like voip). The second part concentrates in identifying and implementing the elements for creating an integrated simulation environment for evaluating the effects of slow convergence of bgp in these applications. At last it is evaluated the created environment through some small scale simulations that try to model the now days internet structure.

Keywords: *AS, BGP, QoS, simulation, ns2.*

Applying Data Mining Techniques to Improve the Models for Credit Risk

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Abstract

Banks offer loans for business clients and are intended to generate profit from the interest rate charged for each loan by creating better models for their evaluation. This paper intends to improve the credit assessment models, to increase the level of prediction accuracy which will potentially lead to a decrease of problematic loans. This paper estimates the performance of the two methods: logistic regression and decision trees depending of their misclassification coefficients for problematic loans. 15,000 loans disbursed during the period 2010-2014 are taken into consideration. The data are divided into ten different groups filtered by the following factors: (1) Interest rate change in recent years has been reduced by 5%; (2) the impurity effect of problematic loans on more than one loan; (3) the lack of information provided by the clients at the moment of the disbursement. The results show that the forecasts for problematic loan vary depending on the model used and the importance of having separate model for clients with one loan against those with more than one loan.

Keywords: *Data Mining, Regression, Decision tree, Credit risk, Performance, Bank*

Dr. Brunela Karamani is a lecturer of computer science at the Department of Computer Engineering, Faculty of Information Technology, in Polytechnic University of Tirana, Albania, teaching programming in different languages such as C, VBA and Pascal. She received M.Sc. degree in Computer Science from the University of Tirana in 1998 and also in Applied Mathematics from the Polytechnic University of Tirana in 2010. Ph.D. degrees in Communication and Information Technology she received from the same university in 2015. Her research focuses on machine learning, data mining and algorithms. Brunela participated in various projects and IT conferences during her academic work experience.

M.Sc. Esteriana Haskasa is currently software engineer, oriented in java backend programming, in UBS Investment Bank located in Krakow Poland. She received M.Sc. degree in Computer Science from the University of Tirana in 2010 and currently she is a "PhD candidate" in Computer Software Engineering at Polytechnic University of Tirana. She was an assistant lecturer in this University too teaching C and VBA. Her experience was evolved in academic field as well, as she was a lecturer of computer science at the Department of Informatics, Faculty of

Science and Nature in University "Aleksander Xhuvani" of Elbasan. Esteriana participated in various projects and IT conferences during her academic work experience.

Estimating Asymmetry of Shocks with VAR models

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Abstract

Different models and methodologies are used to observe, analyze and understand the economic variables and occurrences. VAR is used in many fields to provide us with a coherent form of empiric models and statistical data. The reduced form of VAR is closely linked to the OLS method regression. The logic is based in the autoregressive vectors orthogonality each presenting the components and the linear linkage. Errors extracted from a VAR compose the structural shocks. The number of variables must correspond to the number of errors or shocks in focus. Restrictions are used to not permit any misinterpretation and to achieve a right conclusion depending on the model adaption and situation. The most important variable in the economy is GDP. It is chosen to permit VAR estimating the dynamic of the main macroeconomic indicator and how it behaves and react after a shock in demand or supply. The study provides data for Albania and Eurozone example of the shocks asymmetry as one of the conditions to enter in monetary union.

Keywords: *shock, VAR, asymmetry, response, variable*

Lisnaja KERMENDI has graduated in the Faculty of Economics in 2005. She holds a Second Level Master degree and is currently a PHD candidate in Statistics. She holds a certificate as Chartered Accountant. She has been teaching Financial and Banking Management during academic years 2002-2011 as a part-time lecturer. She currently works as SFE Team member in Sales and Distribution, Retail Area, Raiffeisen Bank Albania

Prof. Dr. Areti STRINGA has graduated in the Faculty of Economics University of Tirana in 1983. She is a lecture since 1983 in the Department of Informatics and Applied Statistics, University of Tirana. She has been part of different academic developments and contributions.

Measurement Errors And Missing Data: Their Approach In Household Surveys

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Abstract

Errors are present in every statistical survey, and the most presented one, in household surveys are: Measurement errors, and Non-sampling errors, mainly dealing with missing data in our surveys. The aim of the paper is to give a short and precise description of the sources of these kind of errors and recommend the ways of editing and imputations, used in household based surveys with a specific focus on improving survey's estimations in terms of their accuracy, reliability and timeliness. The first section discusses the four sources of measurement error and a description of how measurement error occurs in sample surveys through these sources of error is provided. The second section reviews typical problems with missing data and discusses technical issues for the imputation of missing survey data (numerical and categorical variables). The third section describes methods of editing and imputations, as well as software used in household based surveys in Balkan countries, with a specific focus on Household Budget Survey. As a conclusion: there does not appear to be a consensus as to the best imputation method, as much depends on the nature of the data and the missing data process. Referring to the measurement errors, we remark that significant measurement improvements rely, to a large extent, on knowledge and results of previous surveys, while future improvements in the quality of survey data require the commitment of survey research professionals

Keywords: *non-response, missing at random, missing completely*

Fractional Calculus and its Applications

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Abstract

In this paper we introduce Fractional Calculus, having the purpose to emphasizing the importance of Fractional Calculus as a generalization of

ordinary differentiation and integration to arbitrary(non-integer) order. There are many applications of Fractional Calculus in various fields, such as transport theory, probability, statistics etc., and modeling a wide variety of problems in physics, finance, biology and hydrology. We focus on the importance of its applications in Economic Growth.

Keywords: *fractional calculus, fractional derivatives, fractional integral, economic growth, finance.*

The volatility of stock returns. GARCH model

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Abstract

The modeling volatility of stock returns and it's forecasting, have a considerable importance for the finance researchers. The main reason for this interest is that the volatility of stock returns serves as a measure of investment risk also providing essential information for investors to undertake qualitative investment decisions. The returns volatility is also used to estimate the price of the assets, particularly the price of derivatives. Although at first glance, the stock return fluctuations look totally irregular, there is a link that balances instability. To estimate the volatility of returns in time (the conditional heteroscedasticity) the auto regression conditional heteroscedasticity (ARCH) is used. The expansion of ARCH model is known as the generalization auto regression conditional heteroscedasticity or GARCH (Bollerslev 1986). GARCH model is widely studied and it's being a competent model adaptation of time series, and the identification of autocorrelation in time series. This research paper aims to model the fluctuations of stock returns and test its significance. To achieve this objective we will define and describe the factors that cause the volatility in stock returns, than the conditions in which we use ARCH model. We will also identify the limits of this model that encouraged the econometrics to create a new model such as the GARCH. We intend to concretize its use with an example based on the data of second level Banks for the stock returns.

Keywords: *Volatility of stock returns; Heteroscedasticity, GARCH & ARCH model*

Gender Differences Among Adolescent Gamblers. A Case Study In Korça.

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Abstract

Disordered gambling is identified as an addictive, chronic and progressive failure to resist impulses to gamble, that leads to personal and psycho-social problems. Adolescent disordered gambling is a heterogeneous and multidimensional phenomenon and a lot of predictive and risk factors have been shown to influence significantly the disordered gambling. Data from my study, using self-reported adolescents from middle and high schools in Korça, revealed gender differences in the characteristics of adolescent problem gambling. The questionnaire included two measurement instruments to identify adolescents with problems from disordered gambling, DSM-IV-MR-J and SOGS-RA. From a crosstab Chi-Square analysis, significant gender differences were found on 19 from 22 items of both measurement instruments. A Binary Logistic Regression analysis revealed that males were over seven times more likely than females to experience a gambling disorder during their lifetime.

Keywords: *adolescent, disordered gambling, gender, measurement instruments.*

Emil FRASHERI has graduated the Faculty of Economy in Tirana in 1990 with profile in Economical Statistics. Since 2012, he is a lecturer in the Department of Management in the Faculty of Economics in Fan S. Noli University of Korça. He is also a Phd candidate in the Department of Informatics and Applied Statistics in the Faculty of Economy of Tirana. It is the beginning of his scientific research work. His work is focused on the statistical analyses of gambling related problems.

The impact of inequality in the country welfare, the case of Albania

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Abstract

For years there has been opened a country debate about the impact of inequality in economic growth and poverty. The divergence was driven by the different point of view related to the impact of free-growth and pro-poor in the economy but also because no much attention has been put so far in the potential negative effects of inequality. While from a part of the economists, the redistribution of incomes has been seen as a negative factor that can reduce incentives to investments and productivity, the promoters of pro-poor growth defend the thesis of social problems and the deterioration of the purchase power for the medium and the low class. The paper uses a set of household surveys about the living condition in Albania and will try an attempt to explore the inequality indicators and a decomposition approach in order to identify the factor shares that mainly contribute to investigate the inequality evolution and its determinants. The various indexes of inequality will be taken into consideration with the ultimate scope to analyze the impact in the economic growth and welfare in the country.

Keywords: *Inequality, growth, poverty, social inclusion, decomposition*

Estimation Of Foreign Arrivals In Albania Using Logistic Growth Model

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Abstract

The impact of tourism is crucial in the economic progress of a country. Tourism contributes to the integration of Albania, a great generator of foreign exchange, promotes the precious and varied cultural tradition of Albania. The tourism activities employ a huge number people of different social stratum. With the purpose of get ready for the future, Albanian governments, companies and organizations often are dependent on mathematical forecasting models. In order to have accurate forecasting results of foreign arrivals in Albania, in this paper I apply logistic and Bi-logistic growth model, usually used for long term predictions.

Keywords: *Foreign arrivals forecast, Logistic model, time series analysis.*

Valentina SHEHU has graduated the Faculty of Natural Sciences in 1984. She holds a PhD Diploma since 1997 in Mathematics and the title of Ass. Prof. She has published several academic books. Currently she works as a full professor of

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Mathematical Model to Evaluating the Performance of Foreign Funds with Fuzzy Theory (Multi-Criteria) for Decision-Making

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Abstract

Albania, as a developing country, therefore multiple donors (World Bank, European Bank, the German Government, the Italian Government, Swiss, Swedish, Danish ect.) Provide funding in the form of grants or other loans in cooperation with the government. In Albania there is a gap environment in assessing the performance of donor funds from a model which serve all stakeholders to decision making. This paper describes a fuzzy hierarchical analytic approach to determine the weighting of subjective judgments. In addition, it presents a non additive fuzzy integral technique to evaluate foreign funds. Since investors can not clearly estimate each considered criterion in terms of numerical values for the anticipated alter-natives, fuzziness is considered to be applicable. Consequently, this paper uses triangular fuzzy numbers to establish weights and anticipated achievement values. By ranking fuzzy weights and fuzzy synthetic performance values, we can determine the relative importance of criteria and decide the best strategies. I also apply what is called a l fuzzy measure and non additive fuzzy integral technique to evaluate aquatic in-vestment..

Keywords: *Fuzzy Multiple Criteria Decision Making, Analytic Hierarchy Process, Non additive fuzzy integral, Foreign Funds.*

Claims reserving in Albania: the stochastic models as an alternative of deterministic methods

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Abstract

In many types of insurance, there can be considerable delay between the time of a claim-inducing event, and the determination of actual amount that the company will have to pay in settlement. Claim reserve is one of the most important indicators that has an important and strategic decisions applications, therefore an insurance company needs to know on regular basis how much it should be setting aside in reserves in order to handle claims arising from incidents that have already occurred, but for which it does not know the full extent of its liability. The aim of this paper is to come up with a comparison of different deterministic and stochastic methods of claims reserving for Mtp11 portfolio and for particular claims experience, to gives an analysis of how well each of the methods perform.

Keywords: *Chain-Ladder, Stochastic Reserving, Over-Dispersed Poisson Model, Distribution-Free Chain-Ladder*

Mrs. Enkeleda Shehi was appointed by the Parliament of the Republic of Albania, in December 2014 as the Executive General Director of the Financial Supervision Authority (AFSA), for a period of five years.

Mrs. Shehi is a graduate in Mathematics in 1989 from the Faculty of Natural Sciences at the University of Tirana. Also, she has extensive experience in teaching in different faculties of the University of Tirana, where she was professor of foreign subjects like as Mathematical Analysis and Analytical Geometry. Mrs. Shehi has an MBA from the University of Tirana and the Certificate in Actuarial Science from training organized by FSVC, UK Faculty of the Institute of Actuaries and Society of Actuaries English

Mr. Aranit Muja has a Bachelor in Economics and Commerce and a M.Sc. in Economics and Finance, from the Faculty of Economics of the University Milano-Bicocca. In order to enhance his professional career he attended a Master of second level in Credit Risk Management (ISCED 6) of Università Cattolica del Sacro Cuore. He has a strong quantitative background and he is waiting graduation from Ph.D program in Statistics. For the last three years he is working as an actuary at AFSA and part of his job consist in calculation of the insurance premiums and the technical provisions.

Improving the Analysis of Hydrologic Time Data Series in our basins and economic impact of hydro-industries

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Abstract

We propose to improve the analysis of distributions and trend behavior for side inflows in Fierza nd Koman basins using complex system techniques aiming a better estimation of amplitudes of inflows and their economic impact in respective industries. The idea is to evaluate the appropriate distribution of side inflows in the lakes and to use them in the prediction of the probability for a possible future extreme event. We realize this step using parametric distribution as q-Gaussians and q-lognormals. The probabilities of events are compared with commonly assumed lognormal distribution. Next, we use logperiodic fit to evidence the trend of the processes and the presence of critical behavior. Again, this can help to improve the prediction and forecasting as e key term in water management and economization.

Keywords: *hydro industries, q-distribution, q-log-periodic*

Demographic Analysis of Woman Fertility in Albania Using Data Mining Tools

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Abstract

Populations change through three major processes such as fertility, migration and mortality. In this paper we present a demographic analysis of Albanian woman fertility basic attributes that might affect fertility rate. The entire set of attributes affecting fertility are classified into natural attributes, knowledge attributes and economic ones by Factor analysis and the effect of each group on fertility is discussed separately and collectively. Higher employment, higher income and nuclear family system can influence into reduction of the fertility rate in Albania. We use data mining techniques to discover which attributes have the highest impact on country fertility rate. The data is analyzed in various ways; altogether and joined in smaller,

meaningful group. Most relevant decision trees are presented and interpreted showing some known and some new conclusions.

Keywords: *Fertility, Data mining, Decision tree, Regression, Factor Analyses*

A modelling approach for financial analysis of real estate market in Tirana, Albania

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Abstract

The real estate market in Albania and especially in Tirana, has undergone major change and development over the last decade. However this development is characterized by uncontrolled construction and lack of a proper strategy, using old techniques for assessing financial development projects of these assets and thus projects are associated with uncertainty and high flexibility. Financial old techniques may not incorporate the flexibility and uncertainty and to study them we will discuss real options model. Real options analysis has been widely applied in the analysis of projects in Europe in recent years. We will also include the so-called "Engineering Approach" introduced by de Neufville and Scholtes (2011) that is based on Monte-Carlo simulation to analyze the flexibility and uncertainty. Monte-Carlo model will be based on historical data to identify risk factors that influence the value of the project development of real estate. We will use the technique of time-series models to calculate the dependence between the risk factors and apply in a particular case for real estate development in Tirana, Albania. In this study we will analyze the structure of the project risk and how to reduce the risk using flexibility.

Keywords: *Real Options Analysis; Real Estate Development; Monte-Carlo Simulation; Engineering Approach; Flexibility*

How Currencies market is affected by Economic News

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Abstract

Electronic trading in currency (known as online FOREX trading) nowadays has become one of the most profitable businesses thanks to the power of computer technology and global network of information like it is Internet. In this article we will treat an important aspect of analysis that was made in forecast exchange rate of currencies. Will be discussed how important is the fundamental analysis based on economic news and how economic news affect immediately FOREX market. News that will be taken as an indicator of expected changes will be the GDP of places with stable economy, the unemployment rate, the consumer price index (CPI) etc. Extended results will tend to clarify relationship that exists in quantitative terms and possible correlation between the small daily changes of exchange price at the time of economic news publication and how can be foreseen in short terms the change of the exchange rate of currencies. During analysis we will use different time frames (15min, 30min, and 1 hour) to measure duration of the effect of economic news on a specific currency pair. Technical analysis of the evolution of the exchange based on the previous history will be avoided in order to measure the effect as much real possible. The first part of the article as an introduction will introduce with the environment and infrastructure which will help us in data collection. The second part will be devoted to the selection of variables and economic news that will be taken into account during this research. The third part reflects the data and the processing methods selected for them. And the fourth part contains of the results and analysis of relevant research conclusions in the form of suggestions to be taken into account to increase the probability of accurate forecasts of exchange rate using the information published of economic news.

Keywords: *online trading, Forex, Technical analysis. Fundamental analysis*

Asymmetries Of Business Cycle In Albania: The Statistical Analysis Using Triples Test

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Abstract

The presence of cyclical asymmetries in the economic time series has important implications for the economic theoretical models; as for the economic prediction and for the analysis of economic policies because many economic implications depend on the fact that the economic variables are symmetric. The main aim of this study is to test the asymmetrical steepness and deepness in the time series of inflation rate, consumer price index, unemployment rate, Okun misery index, real gross domestic product (GDP) and GDP growth of Albania. The data source is retrieved from the Bank of Albania, during the period January 1st 2000 to December 31st of 2012. The quarterly unemployment rate only shows negative deepness asymmetry at the 89.4% level of confidence. This study is a step in front of the systematic study of the two specific forms of asymmetries: deepness asymmetry, given as asymmetry in the cyclical component and steepness asymmetry, given as asymmetry in the first differences of cyclical component.

Keywords: *asymmetry, business cycle, deepness, steepness, Triples test*

Ornela SHALARI (PhD) has graduated from University of Tirana, Albania, in 1998 with a B.S in Management. She received her PhD degree in Mathematics, Statistics & Applied Informatics from University of Tirana, in 2014. She joined the faculty of UT in 2007 as an adjunct lecturer in the Management Department and later in the Department of Mathematics, Statistics & Applied Informatics. She has been a full-time assistant professor of statistics at the Mathematics, Statistics & Applied Informatics Department, since 2012. Her research interests focus on the statistical analysis of the times series and the asymmetric processes in the Albanian economy.

Anita GUMENI (PhD Candidate) has graduated from University of Macedonia, Thessaloniki Greece in 2010 in Economic Sciences. Currently she is pursuing her PhD degree in Marketing Tourism at UT. She joined the faculty of UT in 2011 and served as a full time Assistant Professor in the Marketing Tourism Department, at the University of Tirana, at Saranda Branch. Her research interests focus on the sustainable development and environmental economies.

Forecasting Time Series Volatility by Using GARCH models: An Albanian Real Data Case

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Abstract

In the new era of globalization and financial liberalization, exchanging rate plays a main role in international markets and also on a developing country

financial system, as an example in Albania. The role of ex-changing rate is mentioned as a very important factor due to the fact that every change on it gives an impact on other financial system components. For this reasons the literature proposes many methodologies on studying the nature of time series distribution, the model which should be considered and different test tools used on valuating best model to be considered. In this paper we have studied ER time series based on monthly, annually and daily data as supposed that our week has 5 working days. Used methodology is based on modeling our time series as ARIMA and SARI-MA model. Furthermore, we model our time series variances as ARCH and GARCH model. As a result, our annually data time series was model as an ARIMA and monthly data time series as a SARIMA model. During modeling daily time series we used conditional heteroscedasticity models as GARCH. Data analysis and model tests were done using EVIEWS8 software. In the context of Albanian bibliography absence, in this paper we made the first steps of modeling Euro-ALL exchanging rate time series volatility

Keywords: *Exchanging Rate, Modeling Time Series, ARIMA, GARCH,*

ICT Contribution To Economic Convergence Of Western Balkans To European Union

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Abstract

The Western Balkans countries are stuck in transition as their rate of economic growth has slowed substantially compared to the pre-crisis period. The region has a number of advantages and unexploited potentials to stimulate investments and further growth. The question is how to find the sources of sustainable growth and be competitive to the European market? The literature shows the importance of ICT and its contribution in economic growth and convergence towards EU, along with other factors. The aim of this paper is to bring in focus the impact of ICT on productivity in the Western Balkans in the framework of the catch-up and convergence hypotheses. The methodology of the paper makes use o time series data for a set of indicators for each of the Western Balkans countries: Albania, Bosnia and Herzegovina, Kosovo, Macedonia, Montenegro and Serbia. The main indicators included are: GDP per employee, ICT goods imports, FDI in-flows. The main conclusion is the crucial role of innovation and ICT sector to promote competitiveness, economic growth and thus the needed reduction

of the living standard gap with EU. However, there are a set of conditions to be established by the countries to improve the enabling environment for doing business and promote productivity in particular in human resources.

Keywords: *Economic convergence, economic growth, technology, innovation, foreign direct investment, economic integration.*

Ermelinda Xhaja (Gjika) graduated from the Business Faculty, University of Vlora in 1999 on Business Management. She is currently a PhD candidate in the Statistics Department, Faculty of Economy, University of Tirana. Ms. Xhaja has obtained a Master degree on Economy/Finance in 2007 from University of Tirana. She has an academic background as lecturer in Investments, Statistics and Economics of Development courses in Tirana and Vlora Universities. Additionally, she has an extensive experience in consultancy and project implementation on economic governance and business climate in Ministry of Economy and international organizations operating in Albania. As an economic researcher she has contributed to some papers and lectures in public and private universities in Albania.

Ermelinda Kordha (Tolica) is actually Associate Professor at University of Tirana, Faculty of Economy, Marketing-Tourism Department. She has finished her PhD in 2010 at this department and has been a former lecturer for 15 years in University of Vlora "Ismail Qemali". Her academic background is related to marketing research, e-marketing and database market-ing as well as Information systems in Tourism. She has contributed with many papers in international conferences and many International Economic Journals. She has also participated as an expert in many economic development projects.

Business Models Reconfiguration From The Value Network Perspective: A Co-Evolutionary Investigation Of Interfirm Networks And B2B IT Capabilities

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Abstract

This paper presents a research proposal aimed at investigating co-evolution of interfirm networks and Business-to-Business (B2B) IT capabilities to support value creation and capture from business models. In the recent years, the notion of business model change as a necessary response to environmental change is strongly advocated in the literature. While the critical role of ICT in operationalizing business models is acknowledged in the literature, the notion of business models IT-enablement has not received substantial attention. Furthermore, the network perspective of strategy implies that characteristics of a firm's ego network effects its ability to

leverage network resource for competitive reactions. It seems that characteristics of a firm's ego network is affected by its B2B IT capabilities, while driving investments in renovating them. However, in what how this co-evolutionary process affects the focal firm's ability to reconfigure its business models in response to environmental change is unknown.

The Complexity of Teachers' Everyday Practice Using Digital Technologies

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Abstract

Between 2008 and 2012 the number of interactive whiteboards in Swedish compulsory school classrooms trebled. Tablet-devices in school education increased with 10 percent, and 65 percent of all student computers were laptops in 2012. For 2015 these numbers continued to rise, where of 20 percent of compulsory school children having tablet devices in 2012, now 40 percent have access to tablet devices. All teachers on compulsory level and high school level have their own computers. The importance of adoption and use of digital technology in education has been addressed on regional, national and European levels. The daily education practice, however, show differently. The schools indicate technologies not being used to their full potential, but only very limited and rarely to support pedagogical practices. The digital technology in schools have been provided and brought to the schools as political decisions. Related research indicate to change the use of digital technology to become more than using it as modern and shiny tools, the change needs to come from the inside of the organization. The complex, dynamic, and context bound nature of teachers' everyday practice needs to be illuminated in order to enable potential change. Various aspects and underlying perspectives need to be investigated in order to gain understanding of the situation as a whole. This research therefore aims to illuminate and by that add to the understanding of compulsory schoolteachers' complex practice using digital technologies. The empirical basis of this research is two compulsory schools including teachers and school leaders, as well as representatives from the municipal Department of Education and the IT-unit within a municipality in south of Sweden. A focused ethnographic approach has been followed applying observations and interviews. Soft Systems Methodology (SSM) has been used to analyze the empirical material and further have theoretical frameworks been considered

as a frame for discussing the outcome of the analysis. The frameworks include the Use and Perception of Ubiquitous Technology model (UPUT), the Technological, Pedagogical and Content Knowledge framework (TPACK) and the Replacement, Amplification and Transformation (RAT) model; addressing the perception and use of technology, the balance between technology, pedagogy and content knowledge, and the levels of technology use and adoption. The outcome of this research illustrates the complexity of teachers' everyday practices, as well as indicates issues of concern that add to the complexity and that are relevant to further address and investigate. Among the issues emerging throughout the study and as part of this dissertation, differences in understandings of the problematic situation can be identified. Different stakeholders have many times multiple, and sometimes conflicting worldviews. In specific situations same issues are spoken by different actors, however the meaning behind the words differs. There is an ambiguity in central objectives and concepts of relevance. There is a lack of understanding of the reality of the daily education and teaching practice and the variation of the different worldviews as well as the underlying mindset and foundations contributing to these differences. This in direct relation to the use of digital technologies but also disregarding the role of technologies, digital or traditional.

Keywords: *compulsory school education; department of education; focused ethnography; teachers; Technological, Pedagogical and Content Knowledge framework; school leaders; Soft Systems Methodology; Systems Thinking*

An EHR system architecture for Albania for improving health care services and its implementation

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Abstract

An Electronic Health Record (EHR) is an evolving concept defined as a systematic collection of electronic health information about individual patients or populations. Such records may include a whole range of personal data in a comprehensive or a summary form, including demographics, medical history, medication and allergies, immunization status, laboratory test results, radiology images, vital signs, personal stats like age and weight,

and billing information. Many European countries have adopted the usage of EHR since the beginning of 2000 and they are successfully benefiting from its advantages: patient self-monitoring of diseases, transformation of health service from hospital-centered way to person-centered way and reduction of hospital-length-to-stay, nurse's administrative time and drug usage in hospital. However, there are countries that have invested decades and several hundred million euros but have failed to implement EHR operationally, mostly due to privacy concerns and lack of management. Motivated and inspired from the successful cases of EHRs' implementations overseas and the clear evidences of their benefits, we aim through this article to present a generic model of EHR that would suitably fit in the Albanian context, legal restrictions, financial environment and the national health system architecture. Therefore, we firstly review some of the existing EHR systems developed in other European countries, aiming to gain experience and knowledge from their solutions, discussions and conclusions. Additionally we point out the most crucial considerations of EHR deployments that can lead to failure with EHR projects unless the considerations handled explicitly. Afterwards, we focus on Albania, and present a developed and a functional EHR architecture that addresses the need, the emergency and the profits of implementing such a system for the Albanian citizens, the health professional staff and the administrative bureaus of the national health system. By the use of this system in Albania, the citizens will always be able to handle through a mobile device and use their personal health information in order to improve their personal healthcare. Besides, the health professional staff will be able to consult abundant information about a patient before making diagnosis and reaching conclusions. The people in charge of the national health system will become capable of monitoring the health of the population, conducting researches and reaching better decisions.

Keywords: *health record, electronic health record, centralized database*

Associate Prof. Dr. Edlira Kalemi is working as associate professor at the Department of Statistics and Applied Informatics, University of Tirana. Her research experience and interests is mainly in the areas of: Knowledge Management Systems, Analysis of Big Data, Knowledge Discovery, Intelligent Systems. For four years she have been Vice Dean of the Faculty of Information Technology at the University of Durres. She has been for 3 years the head of Computer Science department at the University of Durres and the chair in many conferences. She have been contact person of three international projects sponsored by Tempus and Swiss Contact with titles "Multimedia & Digital TV", StudAVP and "Practical Informatics". She has very good knowledge of higher education system and vocational education training.

Associate Prof. Dr. Sule Yildirim-Yayilgan worked as the head of the computer science department between 2006 and 2009 at Hedmark University College

(HIHM) and at Gjøvik University College (GUC) between 2009 and 2015 before her current position at NTNU. She has recently been coordinating a project funded by the Ministry of Foreign Affairs, Norway. She has been participating in projects funded by EU, the Research Council of Norway, Regional Research Council of Norway and the EU Eurostars Programme (Recently SWAN, IQMED, COST1206). She belongs to the Norwegian Information Laboratory, Center for Cyber Information Security and the Norwegian Biometrics Laboratory. Her main fields of interests are artificial intelligence, application of machine learning in various fields, biometrics, autonomous control, image processing and content based indexing and retrieval. She has published more than 60 papers in peer-reviewed journals and conferences. She has been supervising tens of students in computer science, and currently supervises three PhD students and several postdocs, and acts as expert reviewer in a number of conferences of her research fields.

Polina Çeço is a master student in Information Security in the University of Tirana. My academic experience include special courses at HIG, Norway and a proceeding Learning Agreement with Lund University, Sweden for a one year Master in Information Systems. My working experience include one year at the Prime Ministry of Albania in the Department of Legislation, Program Monitoring and Anti-corruption as Operator on Monitoring the Governance Program. My interests includes exploiting the use of Information Systems and Information Security in enhancing education, health, democracy, human rights and services.

Leandër Çeço is a master student in Information Security in the University of Tirana. My academic experience include special courses at HIG, Norway and a proceeding Learning Agreement with Alexandru Ioan Cuza University, Romania for an exchange program in Information Security. My working experience include one year at the Prime Ministry of Albania in the Department of Legislation, Program Monitoring and Anti-corruption as Specialist on Monitoring the Governance Program. My interests include the creation and development on Information Systems to improve life and services in developing countries.

Creating A Workflow Engine For A BPM Application Through The Use Of Microservices Architecture

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Abstract

One of the most common challenges in information system implementation lays on integrating the missing or renewed software in the existing infrastructure, thus system integration is a topic to be faced and thought about. Due to different architectural system the possibility to abstract and generalize the methodologies of system integration is a long and evergoing

process enhanced by the set of technologies in use on different environments. There are many technologies such as Email, HTTP, SOAP, binary and proprietary protocols and many others. Each of them is dedicated to a particular purpose and has its own pros and cons. For inter-connection of those components which are speaking different languages we need some universal channel. The goal of analyzing and abstracting over a set of technologies in order to deduct a universal standard to be used on system integration approaches, is to have the business process management rules embedded in a Service Oriented Architecture. We define a sequence of tasks that have to be done by our SOA components to accomplish one business task aka Business Process. That process is deployed to process engine and launched. During runtime process calls services, invokes human tasks and makes decisions according to business rules. The advantage of the process oriented approach is that we can easily monitor the desired processes and optimize them according to our needs. The final missing part of this approach is using microservices though we will be analysing the challenges of an Architectural system based around Microservices, the complexity at a higher level, in terms of managing these services and orchestrating business processes throughout them.

Keywords: *SOA, BPMS, monitoring, Entity Mapping, Rules as a Service, BAM*

From English to Programming: The New Languages of Our Future

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Abstract

Many times ago, perhaps in the ancient world, if someone needed to communicate something on paper (or papyrus) it was quite impossible, because very few knew how to write (or code with symbols), and of course very few knew how to read and understand it. It is no surprise that reading and writing is what constitutes a literate, a well-educated person. Afterwards the problem relies on the language itself. We need that both the writer and the reader speak the same language, and if not, we simply imply a great solution by introducing English as our lingua-franca. Now, in our technological world, as we give birth to new, smart, and even independent devices, we also need the reader and writer for such communication. Are we going to search again and always for those few who know code and symbols,

or maybe it's time to see programming as the new literacy? This paper will focus on the new dimensions that programming can unleash inside our education and will try to uncover many possibilities oncoming along with many e-learning solutions that contribute to the assimilation of the new languages of our future, as fluently as our human language can be.

Keywords: *Education, E-learning, Programming Languages, The new literacy*

Klodjan LULA has completed his Master of Science in Computer Science, from the University of Greenwich in London, UK, in collaboration with the University of New York in Tirana. Has a bachelor in "Finance & Accounting" by the University "Eqrem Çabej", Gjirokastrë, where afterwards has been employed as assistant lecturer teaching "Computerized Accounting" for four years also being the IT of the university. After ten years of experience in many universities as lecturer and also as a programmer in many banks, non-profit organizations and much known companies in Albania, he is a full time lecturer at the Mediterranean University of Albania. His interests include Programming Languages, Database Systems, Data Mining, Web & Mobile Applications, etc. Recently has won the Top No.1 programmer at Sololearn.com among over 10 million coders worldwide, and is the author of Scratch in Albanian (<http://scratch.mit.edu/>).

Can Kuhn's conception of paradigm shift explain the digital transformation of business models?

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Abstract

In this paper, we adopt Thomas Kuhn's perspective of scientific progress, to discuss whether digitalization and specifically digital transformation of business models represents a shift to a new paradigm. We argue that digital operations and artefacts manifest some inherent characteristics, that significantly differ from traditional business models. Whereas the latter logics operates according to the conventional economic rules, the digital realm function according to the economics of digital information that involves some inherent unique features such as the importance of network effects, negligible marginal costs, different pricing mechanisms, reduction of transaction costs and different revenue models. These features make digital information products difficult to translate and address in economic terms. Thus, a new set of assumptions is required, because the production,

distribution and consumption of digital information products encompasses a distinct inherent logic.

Keywords: *Business models, Kuhn, paradigm shift, digital materiality, dominant logic.*

Erdelina KURTI is a doctoral candidate at Linnaeus University, Sweden. Her research focuses on exploring the challenges and success factors in the process of business model adaptation from traditional to digital with special focus on managerial cognition and its dominant logic(s), as part of the organization's inertia that enables and hinders the transformation.

Anita MIRIJAMDOTTER, PhD, is Professor of Informatics at Linnaeus University, Sweden. She is also Head of Subject, which involves scientific responsibility for Informatics' research and education. Anita's research and teaching are focused in the field of Information Management, more specifically design and management of information, communication and decision systems in dynamic organizational settings; ICT impact on (or implications for) organizational processes; and interactive and human centric methods for inquiring, evaluating, valuing and learning. Her research approach is action oriented, based in systems thinking methodologies and models.

Innovation of SAP ERP: Vision to Execution

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Abstract

As a leader in the Enterprise software market, SAP helps all different organizations and industries face the damaging effects of complexity and come up with new innovative opportunities, standing always one-step ahead of his competitors. In 1972, five entrepreneurs had a vision regarding the massive technological potential of the business industry. With only one client and some good employees, SAP made possible not only the transformation of the Information technology world, but it also changed the way companies made business. Now we are talking of a total of 43 years and 291,000 clients kind of potential.

Keywords: *SAP, SAP S4HANA, SAP Fiori, SAP Cloud Platform*

Gjergji ROBO has graduated in Computer Engineering in 2009 from Politecnico di Milano. He holds a Master Degree in Management Of Information System from Università Commerciale L. Bocconi. During his years in consulting, he was engaged in projects concerning Governance Risk and Compliance, Information System Audit for multinational companies, in financial and industrial sector, and in the implementation and management of projects related to Information Security

services, Risk Management and Business Continuity. Currently he works in Deloitte Albania & Kosovo as a Manager specialized in ERP implementation, Data Migration Management, SAP Hana application development and SAP BO report realization.

Prior Learning Recognition

Besnik SKENDERI

Abstract

Recognition of Prior Learning (RPL) is relatively new concept in Kosovo; however, this approach was established and implemented in European countries since last century. In this paper is described RPL concept, some examples of RPL in different countries. In second part is literature review and findings from research conducted in Kosovo. Research was conducted with 22 professors with the goal to extract their opinion regarding RPL. Recognition of prior learning also referred to as RPL, is the formal acknowledgement of a person's skills and knowledge, no matter how, when or where the learning occurred. Under the standards for NVR Registered Training Organisations and the VET Quality Framework (VQF), competencies may be attained in a number of ways.

This includes:

- * through any combination of formal or informal training and education
- * work experience or general life experience

***Prof. Dr. Besnik SKENDERI** had Doctorate on Management and he is certified trainer for prior learning recognition within National Accreditation Authority of Kosova. He is lecturer at UBT and external associate of Kosovo Institution for Public Administration. He is employed by Telecom of Kosova as coordinator for IT trainings and e-learning. Until now he had published 31 books for IT and Management.*

Double Contingency as Structure's Conflict and source for information

Mimoza AHMETI

Abstract

The implications of the concept of "System" in the system's theory and in its applications are obvious for information. Double contingency is perceived as a continuing conflict within the structures of meaning, and its semantics for application. The concept of structure itself is separated from the necessity of

the continuation of meaning. The system, whatever may be, results in contradicting itself within the flow of mind processing, which is instantly in changing and linking in a newly displayed world. In such condition the concept of systems is better to be recovered with that of mode of operation.

Keywords: *Contingency, double contingency, mode of operation, system, structure*

Internal Audit in ERP Systems

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Abstract

Since the World of business and Economics is changing rapidly, it is a requirement to adapt with the technology that also evolves with giant steps. Nowadays the use of Enterprise Resource Planning Platforms by mid-sized and big companies is necessary. They facilitate every-day business processes. Having all company data stored in one system shorts time and expenses. But if this data's are incorrect the consequences might be dangerous. For this reason, ERP creators have also developed audit tools to make it easier for the users to control the data's that run through the system. In this paper we will try to analyze these audit tools offered by two of mostly used ERP systems SAP and Microsoft Dynamics AX.

Keywords: *Enterprise Resource Planning, Internal Audit, Audit Risk.*

The importance of information for Quality Management

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Abstract

The importance of information in management science is increasing gradually since at the very beginning of this discipline, continuing and spreading gradually together with the number's increase of the management branches. The importance of information on quality management systems, especially on ISO standards has been noticed generally on the past only in terms of scholar publications, mainly on those issues related to statistical processes for decision making. Currently, main of ISO standards are under the reviewing process, as well as the most important and the main ISO standard, ISO 9001. Starting from January 2016, International Standards

Organization launched ISO 9001:2015 variant to be used and practiced by the end of the 2016 and on the future. In this new ISO 9001:2015 version, information has been seen as one of the main factors of success for public and private subjects looking for achieving competitive advantage, taking the right decisions on the way of organization's decision making process, asking for a mandatory documented information system, able for an effective and efficacy management system. As per current developments on the field of ISO standards, this paper aims to give details of documented information system required for those standards application.

Keywords: *Information, quality management, ISO standards*

Enriko CEKO has graduated the Agronomy Faculty and Agr. Economy Faculty (Agriculture University of Tirana 1989, 1996), Faculty of Law (University of Tirana 2002), Faculty of Civil Engineering (USA 2007). He holds a PhD diploma in Management (Faculty of Economy, University of Tirana 2005) and PhD Diploma in Civil Engineering (Bedford University USA 2009). He has about 28 years working experience and about the same experience lecturing, specialized with about 45 training courses (Albania, USA, UK, Israel, Germany, Austria). He is Head of Management Department, Business Professional Academy. He is the author of around 4000 articles and over 50 scientific journal articles, author of "Quality Management Tools" book, etc. His work focuses on quality management, ISO Standards and in-formation related to this subject.

Digital Banking The Wave Of The Future

Anni DASHO¹, Elvin MEKA², Genci SHARKO³, Indrit BAHOLLI⁴

Abstract

The migration to a digital banking world will not be smooth and will lead to further fragmentation in financial service markets. Banks must undergo a deeper modification of their business, culture, and IT, and above all, will need put innovation at its core and use data to create new business, revenue and customer engagement. New developed and implemented technologies change the way people behave and interact in their everyday life. They are changing the business world strategic context, by altering customers' behavior and expectations, business conduct and structure of competition, so the banking industry is no exception at all. Most people in the banking sector agree that digital banking is the wave of the future. The views of what 'digital' means for banking are diverse, and most of the experts/consultants discuss and argue that digitalization will reshape financial institutions fundamentally and will require a structural change in banking system. "Digital banking" often gets confused with mobile banking and online

banking, because all these involve digital applications, in one form or another. Digital Banking is an urgency, not an academic question, and nowadays digital change goes beyond banking. Digital banking is the incorporation of new and developing technologies throughout a financial services entity, in concert with associated changes in internal and external corporate and personnel relationships, to provide enhanced customer services and experiences effectively and efficiently.

Keywords: *Digital Banking, Digital Applications, Digitization, Digitalization*

Anni DASHO has graduated as Electronic Engineer at the Faculty of Electrical and Electronic Engineering, Polytechnic University of Tirana in 1995. She holds a PhD Degree in Information Technology Applied in Economics from May 2014 at the Faculty of Economy, Department of Informatics and Statistics and getting the Professor Associate Doctor of Science Academic Title on "Information Technology Applied in Economy", Faculty of Economy and AgroBusiness, Agricultural University of Tirana, December 2015. Since 2008 she joined the staff of the European University of Tirana, Economic and Information Technology Faculty, as a part time main lecturer and from 2013 and now she is working as full time main lecturer at Master and Bachelor Programmes. She is the author of a lot of journal/conference articles in the field of Software Development, IT Project Management, IT Audit and Security, Banking System etc.

Software as a Service. An enterprise perspective

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Abstract

In the recent years the number of providers of Software as a Service (SaaS) has increased significantly. In the SaaS business model, software providers develop and deliver softwares to customers in the form of services with high performance, security, cost effectiveness, efficient processing, etc. Existing business models face challenges in terms of changing the model of software delivery and pricing strategy compared to traditional softwares. However, the full implications on how companies create, deliver and capture value are not sufficiently analysed. The aim of this research is to provide a complete overview of the impact of the SaaS business model perspective. It is vital for providers to be aware of the consequences of SaaS. Therefore, to assess the

potential implications of a SaaS business model, in addition to literature review, the research is based in a concrete example of a new company that offers software developing. The results show the impact of SaaS on all building blocks of a business model emphasizing in particular the impact on core activities, relationships with clients and partnerships for providers of software, but also the impact of the implementation of an application offered as a service by the users' perspective.

Keywords: *SaaS, business model, software delivery, core activities*

Romina SHIMA has graduated the Faculty of Economic in 2014. She holds the Master of Science diploma in Information Systems in Economy. She has an experience as a .NET programmer for more than 2 years at Logical working with different clients being oriented mostly toward desktop applications, web applications and web services which explains even her interest in cloud computing, big data analyses and business intelligence. In November 2014, she joined the Prepaid Commercial Department at Vodafone Albania under the title Prepaid Product Jn. Manager focused on managing, analysing, launching, delivering products and services for Vodafone Prepaid Base. Since March 2016, she has also started working as a part time lecturer in the Faculty of Economy, University of Tirana.

Kreuzza MEKSI has graduated the Faculty of Economic in 2014 too. She holds the Master of Science diploma in Information Systems in Economy. She has been part of different Structural Business Statistics (SBS) projects in national level while working in Albanian Institute of Statistics (INSTAT), increasing her performance in data analysis, data validation and quality check of different types of data. Working as Project Manager & System Analyst of a number of CRM implementations for SAME DEUTZ-FAHR GROUP ltd, FERRETTO GROUP ltd, etc. and web applications projects for SEFIN ltd has improved her skills in leadership, communication, risk management and coordination of individuals by promoting teamwork.

Ilda SHABANI has graduated the Faculty of Economic in 2014. She holds the Master of Science diploma in Information Systems in Economy. She has worked in the Labour Market Statistics Unit in Albanian Institute of Statistics (INSTAT), increasing her performance in data cleaning and validation, data analysis, calculation of main Labour Market indicators using survey and administrative sources, etc.. In March 2016, she joined the Management of Databases and Metadata Unit in INSTAT. Her work focuses in managing of referential and structural metadata; transferring, managing and processing data based on administrative sources; archiving administrative and survey based datasets; contributing in implementing data warehouse, etc.

Critical success factors and barriers to effective implementation of an Integrated Financial Management Information System

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Abstract

An integrated financial management information system (IFMIS), as a core component in reforming public financial management (PFM) in low- income countries, has been promoted since 1980s by several international aid agencies. The establishment of an IFMIS has consequently become an important benchmark for the country's budget reform agenda, often regarded as a precondition for achieving effective management of the budgetary resources. The paper attempts to investigate the case of Albania, where the regulatory and institutional framework of public finance was entirely new to Eastern European countries. The benefits of an FMIS could be argued to be profound. One of the crucial advantages is that the improved recording and processing of government financial transactions allows prompt and efficient access to reliable financial data. This supports enhanced transparency and accountability of the executive. In addition, an FMIS strengthens financial controls, facilitating a full and updated picture of commitments and expenditure on a continuous basis; it provides the information to ensure improved efficiency and effectiveness of government financial management. Generally, increased availability of comprehensive financial information on current and past performance assists budgetary control and improved economic forecasting, planning, and budgeting. However, these expensive systems frequently fail to achieve the promised benefits and reach the objectives. In the view of other countries lessons and experiences, investigating the factors for success and the potential barriers, this paper investigates the basis for a good practice case of implementation of AFMIS (Albanian Financial Management Information System) .

Keywords: *management, public financial management; human resources management information system.*

Information technology as base support of social and cultural marketing, towards the individual expectations in a global society

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Abstract

The paper tends to introduce the impact of IT on cultural and social marketing as part of marketing 3.0 practices in a global world, through theoretical treatments as well as to evidence the great role of these tools in community development. Methodological basis of the paper includes a theoretical review of the cultural and social marketing 3.0 concepts, related to Information Technology, to better understand parts of the Albanian reality in social and cultural marketing, community development and to design issues for further study questions. The review of existing literature by purpose (base method) is explorer, so the article includes the results of previous studies related to the question. New wave technology allows individuals to express themselves and coordinate their actions with others within a short time. This technology means that they can stay in the market as professional consumers of products and services. Philip Kotler et al., (2010) wrote that in the era of participation, both individuals and corporations create, share and control their popularity through blogs as well as the involvement in marketing, consuming also news, ideas, entertainment, rising the consumer expectations every day, but also taking into account the sensitivity by the effects of the risks that this technology produce. Findings consist in the fact that the growth of social networks work makes it easier for people to talk about products or existing companies as well as their social performance or cultural and social problems. People use IT to express themselves, capacities, desires and ideas for the benefit of the community, culture or specific groups. Cultural marketing, as part of marketing 3.0 practices, focused on desires and problems of global citizens, is ready now to deal with the effects of globalization culture. IT promotes horizontal communication practices and helps marketers to identify the consumer's concerns and desires to have a better life in a global society. Horizontal transfer technologies tend to leave positive traces in their combination with social issues or vulnerable groups in the community. We find new generation

of consumers more engaged towards social issues and concerns, thanks to IT and such examples and are not lacking in Albanian society too.

Keywords: *cultural and social marketing, marketing 3.0, information technology, costumer of social media, horizontal communication, human spiritual marketing.*

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abroad. Currently she lectures mainly in the Bachelor department on social administration and social protection policies while at the Master's level course lectures on communication for social change, on communication and research methodology, integrated methods in social work, social policy monitoring and evaluation. Keywords on expertise: gerontology, social management, communication change, social protection policies, gender, integrated approach to social work.

Online marketing the bright road to the Development of Future Business.

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Emanuela SHKURTAJ

Abstract

Internet will be the most important growth point on business development in Albania. With the internet online marketing growth and development or the potential customers growth, future business of online marketing will be changed. The key point of marketing to business development is making use of the speed of wideness of technique to access customers. The rapid growth of internet to the importance of marketing can be found easily so we have to introduce this easy roads to the business in Albania. We have to start believing and make people believe in the online marketing and give opportunities of growth to the Albanian companies.

The Role of Smart Board on Learning in Secondary School Education: A Case Study from “SEMA FOUNDATION Educational Institutions”

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Abstract

The technology has been advanced incredibly in the last decades of 21st century; it has covered every stage of the daily life. Simultaneously information and communication technology (ICT) has been covered all stages of businesses, Social life and education. The Smart board (SB) also is one of the most important elements of above-mentioned advanced

technology. In this study it is aimed to reveal the attitudes and perceptions of 10th grade students of the “SEMA FOUNDATION” educational institutions schools operating in Albania, regarding the role of active board usage on learning during the lessons hours. For this aim a survey was conducted.

Keywords: *Smart Board, Information Technology (IT), Information and Communication Technology (ICT), Education.*

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NREN as a Promoter for funding Research through ICT services - case study ANA

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Abstract

National Research and Education Network(NREN) could be not only a ISP for the need of Research Academies but it can be used as well as a bridge between Academy, Government and Private Industry. In this paper is described the case study of Albanian NREN (ANA) and how is orientating its strategy using this paradigm. Facilitating the work of Universities through ICT services, elaborating data to facilitate Government Decisions for Academic politics and furthermore build smart platforms with the perspective to reduce the lack of interaction between Private Industry and Academic Research. All these will be followed by different cases of IT Applications that are used nowadays. Another case is the involvement of researchers and universities staff in the projects that ANA is working such GEANT GN4-2.

Keywords: ANA, RASH, Research, Testbed, Funding

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Andi MALAJ is Chief of Software Department at Academic Network of Albania. Andi is ITIL Certified, he has a rich background in developing, maintaining IT applications and managing IT Projects applying standards methodology such as ICE methodology, Agile. He has very good skills in leading IT teams and fulfilling challenging objectives. He has al-so worked on GxP pharmaceutical applications supporting IGM Managers to certify Compliant IT applications. He has covered several key positions such as Project Manager, Service manager.

The Credit information systems in the service of improving credit market in Albania

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Abstract

Credit information systems, CISs provide information to potential lenders in connection with the applicant's credit record, producing a "credit report", which contains details of payment and credit history of an individual, financial accounts and how they are managed as and other information of interest to the credit industry [Ferretti (2006)]. CISs reports help banks in the banking sector borrowers with misbehavior reflected from credit reports that are subject to strict terms and conditions. This is expected to help banks minimize the growth of non-performing loans whose number has a tendency to increase. Information credit sharing for borrowers is expected to minimize the problem of information asymmetry in the financial sector. The information asymmetry between banks and borrowers is one of the main contributors to the high cost of credit. In these situations banks tend to charge a risk premium for the borrower due to lack of client information. This in turn, increases the cost of borrowing, which means acceleration of

repayment of loans, translating into a higher level of default. The exchange of credit information, CISs is expected to facilitate the development of capital information to reduce information asymmetry or symmetry of information increase, reaching that credit costs fall sharply. Therefore, the Central Bank's expectation that the increase in the savings gained from the exchange of credit information translates into a lower cost of credit.

CISs assists lenders in credit decisions more accurate and in a shorter time. CISs collects and distributes manages customer information for lenders in the form of credit reports. These credit reports will help lenders decide whether decisions to extend credit to an applicant, an overdraft on credit cards or any other product expansion which it is always the customer's ability to repay the loan on time.

Keywords: *Credit information systems, CISs credit score, CSs credit history, non –performing loans, customer credit*

WORKSHOP on Modelling and Simulation in Business Informatics

*in collaboration with:
Vienna University of Technology (TUW)*

Microscopic and Macroscopic Modelling and Simulation of Epidemics - Case Study Austria with Economic Implications

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Abstract

Simulation of epidemics can be implemented in two different model approaches. On the one hand a microscopic approach would be the simulation of every individual with their probabilities to be infected. On the other hand a macroscopic view would be the usage of general formulations in form of ordinary differential equations. Both approaches have advantages and disadvantages. Depending on the modelling aspect both models can be used to predict certain epidemic evolution. The presented models will be case studies used to support the decision making of Austrian Health Organizations.

Modelling an Intelligent Application for time series forecasting with Neural Networks

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Abstract

Artificial neural network are known as a comparison solution for modeling time series forecasting. Finding the suitable model for the data forecasting problem is very challenging and in reality, it results in long time-consuming through a trial-and- error procedure. In this paper, we describe the analysis and designing step necessary to construct an application, which can in an automation process select the 'best' neural network structure. The design proposed takes advantages from modularization as a solution for complexity treatment and, parallelization for accelerating the response.

Keywords: *Artificial neural network, system design, time series forecasting*

Some Reflections on Matrix Simulations in Economy

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Abstract

Mathematical modeling techniques in complicated areas of physics may be exploited for economical modeling through simplification of systems using arrays algebra (based in vector and matrix notation). Ising model in magnetism, geophysical inversion, quantum mechanics, all this use arrays algebra for simplification of physical systems and making calculations feasible. Economic systems and financial markets are very complex systems to be modeled and simulated, nevertheless using arrays algebra combined with artificial intelligence methods looks to be useful. We suggest the presentation of entities (agents, resources and products) in a financial market through vectors; and in such case their relations may be expressed through multiplication of vectors with matrices, which elements represent relations between entities in a particular moment of time. A particular matrix can express relations between agents, the way they communicate with each other and the weights of such communication; artificial intelligence may be added to take into account the history of communication between each of couples of agents. Probability and statistical factors may be used to help transformation of arrays from one iteration to the next one. The simulation will be carried on through a serial of timed iterations. Calculations may be parallelized using high performance systems but also even desktops with programmable multi-core Graphical Processing Units available in the market with relatively low prices.

A Model Proposal for the Electric Energy Valorization in a PV Power Plant equipped with CAES System

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Abstract

In this article, an analytical method is evaluated and implemented; to assess the possible electricity sales strategies produced by a 3 MW photovoltaic power plant, connected to a 250 kW CAES (Compressed Air Energy

Storage) system, with a storage capacity of 750 kWh. The presented model combines a different numbers of parameters and variables, relevant for the system optimization. Several simulations of various system configurations have been carried out, to explore and evaluate the economic and technical feasibility of the plant, specifically it has been valued tow case of study: CASE 1 the system is not incentive; CASE 2 the system is incentive. In the end of paper it has been rated the Leveled Cost of Energy (LCOE) and specified how the investment could become affordable in the foreseeable future.

Keywords: *CAES, Photovoltaic System, Energy Accumulation Systems, Energy Power Exchange, LCOE*

A Customer Intelligence Platform: bringing customer insights in a CRM platform

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Abstract

Incorporating a metadata layer, and a Data Lake Datasets composed of discrete objects, like image collections, scanned documents or free text is a poor match for the traditional database environment.

These requirements compel rethinking of basic assumptions about data architecture and system design, assumptions that have been present for two decades. It is no longer sufficient to use only a relational database and an ETL tool, nor is there a single unified data model for all data. Instead there are many discrete data sets that can be integrated as needed, stored in their original form or in various stages of integration all the way through to the heavily standardized and quality-assured data one finds in a data warehouse.

This paper present Apache Spark as a computation Engine designed to solve the challenges related to data gravity, the fact that Services and applications that use data tend to bring even more masses of data.

Keywords: *Data Lake, APIs, Execution engine, ML Libraries*

UBT Center for Transdisciplinarity Modelling and Simulation

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Abstract

UBT, as one of the largest and leading school of ICT and System Engineering in Western Balkan it express high dynamism, leadership and innovation on development of systems and applications for different areas. The aim of this paper is to present the interdisciplinary center for modelling and simulation at UBT. System thinking approach, transdisciplinarity and innovation are applied in this case in order to use modeling, simulation and optimization in computer science, telecommunication, engineering management, mechatronics, robotics, education and training, energy, information systems, health science and technology, food science and technology, civil engineering and infrastructure, production planning and scheduling, economics, business and management. As Case Study in this paper will be presented the Complex Production Planning and Scheduling Problem using Simulation and the INTESCHED as the Optimisation tool.

System Modelling and Simulation applied in the field of Economy

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Abstract

The talk will address the benefit of applying mathematical modelling and simulation in scenarios in economy. Mathematical modelling opens the possibilities to replace rather simple static formulas by dynamical models for simulating a certain system behavior. The resulting simulation outcomes can be used to analyse potential system and business processes of an economic or socioeconomic system. Moreover certain forecasts can be done by using several simulation runs to support decision-making on the basis of scientific valid statements.
