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20-23 May 2013, Athens, Greece

Edited by Gregory T. Papanikos

THE ATHENS INSTITUTE FOR EDUCATION AND RESEARCH



Information Technology &
Computer Science Abstracts
9th Annual International
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Athens, Greece

Edited by Gregory T. Papanikos

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Preface

This abstract book includes all the abstracts of the papers presented at the *9th Annual International Conference on Computer Science & Information Systems, 20-23 May 2013*, organized by the Athens Institute for Education and Research. In total there were 22 papers and 32 presenters, coming from 16 different countries (Brazil, Canada, Egypt, France, Italy, Lebanon, Lithuania, Malaysia, Russia, South Africa, South Korea, Spain, Sudan, Thailand, UK, USA). The conference was organized into 9 sessions that included areas of Network Information Systems, Computer Modelling and Computer Science Theory, Health Informatics, Management Strategies of Information and other related disciplines. As it is the publication policy of the Institute, the papers presented in this conference will be considered for publication in one of the books of ATINER.

The Institute was established in 1995 as an independent academic organization with the mission to become a forum where academics and researchers from all over the world could meet in Athens and exchange ideas on their research and consider the future developments of their fields of study. Our mission is to make ATHENS a place where academics and researchers from all over the world meet to discuss the developments of their discipline and present their work. To serve this purpose, conferences are organized along the lines of well established and well defined scientific disciplines. In addition, interdisciplinary conferences are also organized because they serve the mission statement of the Institute. Since 1995, ATINER has organized more than 150 international conferences and has published over 100 books. Academically, the Institute is organized into four research divisions and nineteen research units. Each research unit organizes at least one annual conference and undertakes various small and large research projects.

I would like to thank all the participants, the members of the organizing and academic committee and most importantly the administration staff of ATINER for putting this conference together.

Gregory T. Papanikos
President

FINAL CONFERENCE PROGRAM
**9th Annual International Conference on Computer Science &
Information Systems, 20-23 May 2013, Athens, Greece**
PROGRAM
Conference Venue: Titania Hotel (52 Panepistimiou Avenue)

Organization and Scientific Committee

1. Dr. Gregory T. Papanikos, President, ATINER.
2. Dr. Panagiotis Petratos, Vice-President of ICT, ATINER & Associate Professor of Computer Information Systems, California State University, Stanislaus, USA.
3. Dr. George Poulos, Vice-President of Research, ATINER & Emeritus Professor, University of South Africa, South Africa.
4. Dr. Nicholas Pappas, Vice-President of Academics, ATINER & Professor, Sam Houston University, USA.
5. Dr. Vladimir Akis, Head, Mathematics and Statistics Research Unit, ATINER & Professor of Mathematics and Computer Science, California State University, Los Angeles, USA.
6. Dr. Constantine Georgakis, Associate Professor, DePaul University, USA.
7. Dr. Dominique Haughton, Professor, Bentley University and Toulouse School of Economics, USA.
8. Mr Stephen James Hole, Senior Lecturer, Swansea Institute of Higher Education, U.K.
9. Dr. Fotis Liarokapis, Senior Lecturer, Coventry University, U.K.
10. Dr. Ronald Lodewyck, Professor of Computer Information Systems, California State University, Stanislaus, USA.
11. Dr. Barbara Nicolai, Professor, Purdue University, USA.
12. Dr. Vasos Pavlika, Senior lecturer Software Engineering, University of Westminster, U.K.
13. Dr. Abdel-Badeeh Salem, Professor, Ain Shams University, Egypt.
14. Dr. Stilianos Vidalis, Senior Lecturer, University of Wales, Newport, U.K.
15. Ms. Lila Skountridaki, Researcher, ATINER & Ph.D. Student, University of Strathclyde, U.K.
16. Mr. Vasilis Charalampopoulos, Researcher, ATINER & Ph.D. Student, University of Strathclyde, U.K.

Administration

Fani Balaska, Stavroula Kiritsi, Eirini Lentzou, Konstantinos Manolidis, Katerina
Maraki & Celia Sakka

C O N F E R E N C E P R O G R A M

(The time for each session includes at least 10 minutes coffee break)

Monday 20 May 2013

09:00-09:30 Registration

09:30-10:00 Welcome and Opening Remarks

- Dr. Gregory T. Papanikos, President, ATINER.
- Dr. Panagiotis Petratos, Vice-President of ICT, ATINER & Associate Professor of Computer Information Systems, California State University, Stanislaus, USA.

10:00-11:30 Session I: Computer Modelling and Computer Science Theory I

Chair: Panos Petratos, Vice-President ICT, ATINER & Associate Professor of Computer Information Systems, California State University, Stanislaus, USA.

1. Son Pham, Professor, California State University at Northridge, USA & Thu Pham, Senior Consultant, Teradata Inc, USA. Dynamic External Merger Sort for Partial Group-by in Optimization.
2. Shirish C. Srivastava, Associate Professor, HEC Paris, France & Shalini Chandra, Nanyang Technological University, Singapore. Workplace Collaboration in Virtual Worlds: The Role of Social Presence and Individual User Characteristics.
3. Pedro G. Guillen, Researcher, University Politecnica of Madrid, Spain. Topological Proof of the Computability of the Algorithm based on the the Morphosyntactic Distance.
4. Phongphan Danphitsanuphan, Lecturer, King Mongkut's University, Thailand. Automatic IP-Address Configuration Converting for Public Network.

11:30 -13:00 Session II: Health Informatics

Chair: Rodrigo Rocha Oliveira, Federal Institute Science and Technology of Mato Grosso, Brazil.

1. Mohamed Audi, Student, Zagazig University, Egypt, Abdel-Badeeh Salem, Professor, Ain Shams University, Egypt & Rania Hodhod, Professor, Ain Shams University, Egypt. An AI Approach to Transform the E-Patient Records into Clinical Cases.
2. Dovile Karaliene, PhD Student, Kaunas University of Technology, Lithuania, Zenonas Navickas, Professor, Kaunas University of Technology, Lithuania & Agne Slapsinskaite, Master's Student, Lithuanian University of Health Sciences. A Mathematical Information Algorithm for the Analysis of ECG Complexity.
3. Rodrigo Rocha Oliveira, Professor, Federal Institute Science and Technology of Mato Grosso, Brazil & Jose Ivo Oliveira, Professor and Researcher, Federal Institute Science and Technology of Mato Grosso, Brazil. The Use of Scalar Vector Graphics - SVG Pattern in the Human Ear Biometrics.

13:00-14:00 Lunch

14:00-15:30 Session III: Network Information Systems

Chair: Francis Francis, Associate Professor, Notre Dame University-Louaize, Lebanon.

1. Dong Yoon Ka, Master Student, Sungkyunkwan University, South Korea. Adaptive Multicast to Unicast Transmission in Wireless LAN.
2. Shariq Haseeb, Researcher, MIMOS Berhad, Malaysia, Hasbullah Mazlan, Mohammed Abobakr Ahmed Balfaqih, Siti Norhaizum Mohamad Hasnan, & Muhammad Faheem Mohd Ezani, MIMOS Berhad, Malaysia. Latency Evaluations and Reduction Techniques in Authentication Phase of Centralized WLAN Hotspot Networks.
3. Panagiotis Petratos, Associate Professor, Department of Computer Information Systems, California State University, Stanislaus, USA. Online Education Trends from Current Teaching and Learning Experiences of Information Systems.

15:30-17:00 Session IV: Management Strategies of Information I

Chair: Amanda Peart, Senior Lecturer, University of Portsmouth, UK

1. Sungjae Cho, Master Student, Sungkyunkwan University, South Korea. Edge-Detected Conditional Bilateral Filtering Algorithm.
2. Alexandre Petrenko, Lead Researcher, CRIM, Canada & Nina Yevtushenko, Professor, Tomsk State University, Russia. Generating Adaptive Tests for Nondeterministic Systems Modelled by FSM.
3. Doha Elsharief, Assistant Professor, University of Khartoum, Sudan. Multi-Level Mobile Cache Consistency Scheme Based on Application Requirements.
4. Hajar Mozaffar, PhD Candidate, The University of Edinburgh, Business School, UK. Inter-Organizational Technology Knowledge Exchange: Beyond Communities of Practice.

21:00-23:00 Greek Night and Dinner (Details during registration)

Tuesday 21 May 2013

09:00-10:30 Session V: Information Assurance & Networks

Chair: Doha Elsharief, Assistant Professor, University of Khartoum, Sudan

1. Penny Ross, Senior Lecturer, University of Portsmouth, UK & Amanda Peart, Lecturer, University of Portsmouth, UK. Use of Honey Tokens in Database Security.
2. Amanda Peart, Senior Lecturer, University of Portsmouth, UK & Mo Adda, Principal Lecturer, University of Portsmouth, UK. Quality of Service in WiMAX: Real World Aspects of Social & Environmental Influences on Mobility.
3. Emmanuel Babatunde Ajala, Ph.D. Student, Tshwane University of Technology, South Africa, Olu Olugbara, Lecturer, Durban University of Technology, South Africa & Sunday Ojo, Executive Dean, Tshwane University of Technology, South Africa. A Conceptual Framework for Information Society Measurement.

10:30-12:00 Session VI: Management Strategies of Information II

Chair: Roger Crawfis, Professor, The Ohio State University, USA.

1. Francesca Di Virgilio, Assistant Professor, University of Molise, Italy & Loredana Di Pietro, Assistant Professor, University of Molise, Italy. Tourist's Group Knowledge Representation and the Role of Ewom for the Choice of Tourist Destination.
2. *Francis Francis, Associate Professor, Notre Dame University-Louaize, Lebanon. Designing E-Learning Process.
3. Athanasios Paraskelidis, Lecturer, University of Portsmouth, UK, Adda Mo, Principal Lecturer, University of Portsmouth, UK & Manana Dewage, Thilina P.R., Professor, University of Portsmouth, UK. Evaluating the Energy Efficiency of Modern VoIP Applications.

12:00-13:00 Session VII: Computer Modelling and Computer Science Theory II

Chair: Athanasios Paraskelidis, Lecturer, University of Portsmouth, UK

1. Zbigniew J Gackowski, Professor, California State University Stanislaus, USA. From User- to Purpose-Driven IS Development.
2. Igor Gurevich, Senior Lecturer, IPI RAS, Russia. Information Laws (Informatics Laws) of Nature.

13:00-14:00 Lunch

14:00-15:00 Session VIII: Management Strategies of Information, Computer Modelling and Computer Science Theory

Chair: Haim Mendelson, Professor, Stanford University, USA.

1. Mihail Mateev, Assistant Professor, UACEG Sofia, Bulgaria. Seismic Analysis Using Cloud Computing (Windows Azure).
2. Roger Crawfis, Professor, The Ohio State University, USA. Towards Effective Visualizations and Fun Procedural Content.

17:30-20:30 Urban Walk (Details during registration)

21:00- 22:00 Dinner (Details during registration)

Wednesday 22 May 2013

Cruise: (Details during registration)

Thursday 23 May 2013

Delphi Visit: (Details during registration)

Mohamed Audi

Student, Zagazig University, Egypt

Abdel-Badeeh Salem

Professor, Ain Shams University, Egypt

&

Rania Hodhod

Professor, Ain Shams University, Egypt

An AI Approach to Transform the E-Patient Records into Clinical Cases

Emmanuel Babatunde Ajala

PhD Student, Tshwane University of Technology, South Africa

Olu Olugbara

Lecturer, Durban University of Technology, South Africa

Sunday Ojo

Executive Dean, Tshwane University of Technology, South Africa

A Conceptual Framework for Information Society Measurement

This study intends to develop a framework for information society measurement. The measurement of information society has become one of the important issues globally. The purpose of measuring information society is to provide metrics that provide basis for determining the standing of a nation in taking full advantage of opportunities offered by the present information age for social transformation and economic development. The goal of this study is to develop a generic framework for information society measurement with appropriate empirical validation. This entails a critical analysis of the existing frameworks to identify the methodological gap, and development of an empirically validated framework with socio-technical constructs derived from an established framework and able to provide the level of semantic robustness necessary for information society measurement. The study will posit a model of information society measurement derived from the existing framework by the combination of web scraping and social network analysis discover relationships among the constructs. This will also use the degree of centrality of the constructs, closeness, betweenness and density to bring out the generic model that can be used as proxy for information society measurement of any nation. This study will provide baseline information that will enable societies, communities and organizations to determine where they stand in assuming an information society, mitigate the risk of failure in initiatives directed at Information Communication Technology (ICT) while it will enable social and economic transformation. The information resulting from this study can find its use in information society comparisons, monitoring, reporting and planning.

Sungjae Cho

Ph.D. Student, Sungkyunkwan University, Korea

Edge-Detected Conditional Bilateral Filtering Algorithm

The bilateral filter is a nonlinear filter that smooths a signal while preserving strong edges. but when it is carried out repeatedly, some of important edges also are smoothed gradually because those color gap is not far enough. In this paper, we propose a conditional bilateral filter (CBF) for enhanced edge-protected image abstraction. Our approach is carried out with two weights. The one is edge weight based on edge condition which relies on edge detection algorithms. The other is color gap weight which is used in the bilateral filter. Our method is simple and easy to implement. Experimental results demonstrate the effectiveness of our method in protecting edges and image abstraction.

Roger Crawfis

Professor, The Ohio State University, USA

Towards Effective Visualizations and Fun Procedural Content

Many difficult problems result have the characteristic of a very large parameter space that must be searched. Many visual or design problems also have ill-defined metrics or no metrics at all to quantify their quality. For visualization, the user typically works top down, controlling the parameters of the visualization (e.g., transfer function, camera, iso-values, clipping planes, etc.). For game design, a combination of artists and level designers typically work bottom up placing individual elements and sculpting the level. The parameters are hidden and emerge as the level is built. While the research on procedural content generation is rich and visually powerful, it is not clear that it is useful for certain genre's of game design. Constraints can typically be added, but again with artist support. If we are to generate massive worlds that have a good balance of game play (whatever that means) better tools, algorithms and mathematics are needed. This talk will look forward to the future and examine possible approaches to tackling this hard (and unsolved) problem.

Phongphan Danphitsanuphan
Lecturer, King Mongkut's University, Thailand

Automatic IP-Address Configuration Converting for Public Network

To be able to connect to the public WIFI networks, automatic DHCP function is needed to be enabled. This is not applicable to devices, which users do not have authorization to make change their network configuration, such as office notebook or fixed IP-address devices. This paper introduces Zero-configuration software module to cope with the problem at the network gateway by editing Ethernet package header to the required IP address parameters of a particular public network both of incoming and outgoing packages. The Experimental results show that the Zero configuration module can convert Ethernet package with above 99% of throughput in various testing scenarios. It can take up to 7,100 packages per second (about 80 Mbps) and its efficiency is 96.27% compared against normal data transfer (Zero-configuration module disabled) through the network gateway. Moreover, it can handle all well-known ports and services including VPN, VLAN etc.

Francesca Di Virgilio

Assistant Professor, University of Molise, Italy
&

Loredana Di Pietro

Assistant Professor, University of Molise, Italy

Tourist's Group Knowledge Representation and the Role of eWOM for the Choice of Tourist Destination

This paper provides a conceptual representation to explore the tourist's group knowledge investigating the influence of group variables and the role of eWOM on decision making process.

Augmenting organizational behaviour approach we illustrate a conceptual proposal for improving the current tourist's knowledge representation through integration of one important level of analysis: the group.

The paper highlight the possible role of group's dynamics and of e-word of mouth communication (e-wom) on tourist's group decision making process and its impact on our theoretical representation which is an evolution of tourist's knowledge models for the development of a theory of tourism behaviour intention.

This research does not focus on a specific tourist's destinations, thus the presence of different destinations may affect consumers in different ways, according to their involvement towards to a particular destination. This study contributes to deepening the scientific debate on the tourist's destinations.

The findings of this research support the development of tourism marketing and communication strategies focused on the online contexts as factors capable of influencing tourists' behaviour in a more efficient way.

In the past literature, many aspects of tourist behaviour have been neglected. One of these aspects is exactly the study of tourist's group behaviour that is the original focus of this paper.

Doha Elsharief

Assistant Professor, University of Khartoum, Sudan

Multi-Level Mobile Cache Consistency Scheme Based on Application Requirements

In mobile environment, supporting multiple levels of consistency (strict and weak) while maintaining cache consistency improves the performance of data access. The weak levels enhance the rate of sharing on data items between the concurrent clients. In contrast, the strict level enables the mobile client to perform operations on cached data while disconnected. The multiple levels of cache consistency provided by the existing scheme are based on the mobile client interest, i.e. each mobile client is responsible to determine the consistency level of each of its cached data items based on its current requirements on that item. However, this is not an appropriate idea since the consistency of the cached data items should be determined based on the requirements of the application on that item. The mobile application may allow a degree of weak consistency to some cached data and some critical cached data have to be up to date with data in the source. Moreover, the process to determine the consistency requirements on each cached data item which are then send to the base server incurs overhead on the mobile client and base server represented in the consumption of client limited energy power and in maintaining different consistency requirements on a same cached data item, respectively. To address this issue, we proposed a new stateful multi-level scheme to maintain mobile cache consistency based on application requirements called Application Based Multi-Level Mobile Cache Consistency Scheme (ABMMCCS). The simulation results show that under all levels of consistency ABMMCCS has significantly reduced the overhead of the mobile client and base server.

Francis Francis

Associate Professor, Notre Dame University-Louaize, Lebanon

Designing E-Learning Process

Zbigniew J Gackowski

Professor, California State University Stanislaus, USA

From User- to Purpose-Driven IS Development

It is time making the next bold step in evolution in information system development: from a user- to a purpose-driven. From the dawn of human kind the main concern was bare survival. Only much later, humans started asking: what is the purpose of their existence and started articulating their purposes. The initial concern was how to use computers at all. To be used, they had to become user-friendly. To a substantial degree we learned how to do it. The next concern should be their purposive use. This requires a paradigmatic shift in thinking: from user- to purpose-driven information development. This changes the framework, the model, the main perspective, the main point of reference, and the yardstick of measuring progress. Its basic features are the intellectual essence of this paper: the necessary and sufficient conditions, a pragmatic view of information; its informativeness, effectiveness, usability, and efficient usefulness.

Pedro G. Guillen

Researcher, University Politecnica of Madrid, Spain

Topological Proof of the Computability of the Algorithm based on the the Morphosyntactic Distance

Following the previous works of E. Villa, A. De Santos and P. G. Guillén, considering a natural language it is possible to built the lexical associated space as a free semigroup, with the grammatic rules as its restrictions. Through several quotients and manipulations the univocal language is built, solving the problems of polisemy and synonymy that comes with the given natural language. Since here, the Morphosyntactic Distance can be defined over the elements of this group regardless of its algebraic properties, from a linguistic criterion. Therefore, it induces a topological space, which is called Morphosyntactic Space. Based on these hypothesis, some properties of this space are studied in this paper from a topological point of view, as compactness, total disconnection and separation. Later, the space is related through homeomorphisms, continuous functions and injective and surjective functions with some mathematical known spaces. After, a proof of the computability of the associated algorithm is given from these properties. Beyond the concrete problem which is solved in the paper with a topological argument, is shown that the method used in the proof could be generalized for an entire class of problems related with linear programming.

Igor Gurevich
Senior Lecturer, IPI RAS, Russia

Information Laws (Informatics Laws) of Nature

The main characteristics of heterogeneities (information) of physical systems are: uncertainty (information) and information divergence observed (observable in quantum mechanics called any physical quantity that can be measured, and the results of the experiment must be real numbers) and states (the state of a physical system defined by the vector in a Hilbert space), which characterizes the volume of information (information capacity) of the heterogeneity; joint information entropy, which characterizes the unitary transformation; mutual information, which characterizes the interaction of physical systems; differential information capacity of matter [1-4]. The information laws (informatics laws) of nature are [1-5]:

The law of simplicity of complex systems. Such variant of complex system is realized, survives which possesses the minimum complexity.

The law of simplicity of complex systems is realized by nature in a number of constructive principles:

" Occam Razor "; hierarchical modular construction of complex systems; symmetry; simmorfoz, stability; field interaction (interaction through the carrier or interactions through space-time status, for example, curvature of space-time); extreme uncertainty (functions of characteristics distribution have extreme uncertainty).

The law of conservation of uncertainty (information). Uncertainty (information) of the isolated (closed) systems is saved at physically realized transformations and only at physically realized transformations.

The law of finiteness of information characteristics of complex systems. All kinds of interaction between systems, their parts and elements have final speed of distribution. The speed of change of system states of elements is also limited.

In any system of coordinates information on event is always final. Duration of signal ΔT is always more than zero ($\Delta T > 0$). Information on coordinates of physical systems in our Universe is limited by 333 bits.

The law of necessary variety by W. Ashby. For effective functioning of system a variety of operating body should be no less than variety of management object.

Uncertainty (information) is the basic characteristic of a variety of systems. The law of necessary variety by W. Ashby is also realized in a number of concrete principles:

Shannon theorems, Kotelnikov theorem, Kholevo theorem, Brillouin theorem, theorem of Margolis-Levitin.

Gödel theorem of incompleteness. In the rich enough theory (containing on arithmetic) there are always unprovable true assertions.

The law of systems complexity growth. During systems evolution its uncertainty (systems information) grows.

Le Chatelier Principle. External influence discomposing system, calls in it the processes, aspiring to weaken results of this influence.

The main principle of quantum mechanics by A. Zeilinger: Elemental physical systems contain (carry) one bit of information [5].

The works of the author and American, Canadian, European, Chinese,...scientists are confirming primacy of information laws: the information laws (informatics laws) define and restrict the physical laws; the informatics laws have general, universal character, operate in all possible universes, even in the universes with different physical laws [3-4].

Example of use of the information approach to study the cosmological objects is given in paper [6].

Shariq Haseeb

Researcher, MIMOS Berhad, Malaysia

Hasbullah Mazlan

Mohammed Abobakr Ahmed Balfaqih

Siti Norhaizum Mohamad Hasnan

&

Muhammad Faheem Mohd Ezani

MIMOS Berhad, Malaysia

Latency Evaluations and Reduction Techniques in Authentication Phase of Centralized WLAN Hotspot Networks

Centralized Wireless Local Area Networks (WLANs) are becoming increasingly popular in public hotspot deployments. This is because centralized networks make use of a single infrastructure network where several Access Points (APs) connect to the network for services such as Quality of Service (QoS), traffic control, access control, roaming, SNMP and billing. Even though centralized network deployments are robust, secure and easily expandable, they pose high handover latency for mobile clients that move from one AP to another. While roaming, mobile clients have to perform scanning, authentication and association, 802.1x authentication and key management processes. These processes take a long time and pose a challenge for real-time applications that are sensitive to network latencies. This paper aims to experimentally evaluate the latencies involved in different processes of roaming under erroneous and non-erroneous conditions. The paper further proposes a mechanism to reduce the overall handoff latency by 260 times for real-time applications by eliminating the 802.1x authentication latency.

DongYoon Ka

Ph.D. Student, Sungkyunkwan University, Korea

Adaptive Multicast to Unicast Transmission in Wireless LAN

With widespread deployment of mobile devices (Notebook, Smartphone, Tablet, etc), IEEE 802.11 wireless LAN (WLAN) and Media broadcasting services using IP multicast have been widely used. However, due to restrictions on IEEE 802.11 standards, the rate of multicast transmission on WLAN is slower than unicast transmission. This is called as a fixed base rate problem. Previous papers have been proposed multicast to unicast conversion methods. But those were experimented with limited mobile devices and in clean network. In this paper, adaptive multicast to unicast transmission in WLAN is proposed to overcome a fixed base rate problem with adaptation in real network conditions. The proposed method monitors network conditions and converts media access control (MAC) address of multicast packet to unicast MAC address. The results from test-bed show improving the throughput and decreasing packet loss compared to the previous papers.

Dovile Karaliene
Lithuania, Zenonas Navickas, Lithuania
&
Agne Slapsinskaite
Lithuania

A Mathematical Information Algorithm for the Analysis of ECG Complexity

The last years studies showed that the complexity in human body functioning is important area of research. The complexity of ECG signals is an important characterization of a process and might be used as a diagnostic tool. ECG parameters have different duration and could show the complexity in different fractal levels. A number of methods have been used for the analysis of ECG complexity. These methods evaluates global features of processes but are not able to detect local features of dynamical processes.

In this paper is presented the mathematical information algorithm based on the concept of the rank of a sequence. The task of the presented algorithm is to develop strategy for finding the nearest algebraic progression to each segment of time series of the ECG parameters. This algorithm was used for developing a software for the analysis of ECG complexity. Developed software was applied for the analysis of physiological processes in a bicycle ergometry test. The practical experience has shown that this software can be effectively used for the analysis of ECG parameters although ECG signals are contaminated with noise.

Mihail Mateev

Assistant Professor, UACEG Sofia, Bulgaria

Seismic Analysis Using Cloud Computing (Windows Azure)

Some practical tasks such as seismic analysis of structures require more computational resources, memory and data storage. This resource can be used to solve certain tasks and then not be necessary. Cloud computing may become a major tool for researchers to access processors and storage. This paper refers to the use of Windows Azure, since most software used for seismic analysis work on Microsoft platforms.

Windows Azure provides different opportunities for seismic analysis. This can be accomplished in several ways:

1. Using of existing software for seismic analysis in Windows Azure by VM Role (Migration of the existing design and analysis software for structural engineers in the Windows Azure)
2. Creating applications using Parallel Processing specifically for Windows Azure.
3. Using the data in Windows Azure (SQL Azure and Azure Blob Storage) data exchange between different desktop applications and applications running in Windows Azure.
4. Using a remote automation of Windows Applications by Azure Service Bus

Approach: The study will demonstrate prototypes based on the first three ways to use Windows Azure, mentioned above.

Results: As a result will be demonstrated working prototypes. Comparison will be made between the different approaches to analyze the advantages and disadvantages of each. The comparison will be made in financial and technical aspects.

Hajar Mozaffar

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Inter-Organizational Technology Knowledge Exchange: Beyond Communities of Practice

On one hand, the past two decades has seen an increasing body of research on the role of practice in knowledge generation and learning processes across organizational boundaries. These studies are formed around knowledge transfer for product development. On the other hand user communities have been known as sources of rich user knowledge. Studies suggest that user groups represent one of the most important coupling mechanisms between software vendors and users (Von Hippel, 2005). However the role of user groups goes beyond developing a user-vendor link. In fact there are many cases where the core function of these groups lay in collaboration across heterogeneous user firms. This paper delves into the fine grain details of an online ERP user forum and shows how the forum acts as a 'Knowledge Market' facilitating exchange of experience and practice in product use. This study examines interactions of an ERP user forum for a duration of four and half years through analysis of the forum threads. It primarily shows how exchange is enabled in the forum and then presents the types knowledge exchange. Finally the paper shows that although there are some similarities between these user communities and Communities of Practice- CoP (Wenger, 2000), there is a 'trading' nature to this knowledge that goes beyond the conventional explanation of CoP.

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Evaluating the Energy Efficiency of Modern Voip Applications

With consistently increasing cost of energy and the increasing attention for reducing carbon, the need of less energy consumption solutions are inevitable. The reduction of Carbon footprint in the communication platforms has been identified as one of the main considerations in the future communication systems. This is due to the increasing participation by governments, lawmakers and regulators to encourage organisations and general public to use Carbon neutral or less Carbon consumption products. Research on energy efficient applications for mobile and stationary computer systems has been quite limited so far and only recently has started to be under focus.

The current research paper focuses on developing a less energy consuming voice, video and text communication platform to reduce the overall carbon footprint in organisational level. The first step was to develop a VoIP application (Green Talk) from scratch and this would offer users all the basic communication features (text, audio, video) like other well known such as "Skype" and "Google Talk" offer. The developed application goes through a number of tests in an attempt to calculate its power consumption during text, voice and video communications. During the experiments, a specific procedure was followed in an attempt to ensure that the most accurate results would be gathered. A software tool, Joulemeter, is used to estimate the computer's power use but also the power impact of a specific application. Once the results for "Green Talk" are complete the end product is evaluated against publicly available communication platforms such as "Skype" and "Google Talk" to validate the energy consumption and carbon usage. Based on the gathered results, when "Green Talk" is configured to provide the same quality of audio and video communications as the other two applications, it's power consumption proves to be significantly lower. The difference might seem to be insignificant for a single computer but if this is scaled up to the million users of "Skype" and "Google Talk" worldwide, the energy savings and the smaller carbon footprint of "Green Talk" are by no means negligible.

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Quality of Service in WiMAX: Real World Aspects of Social & Environmental Influences on Mobility

In today's technological world, wireless device users are predominantly on the move while still enjoying connectivity of the Internet. How people use their mobile devices differ in many ways, not only from a technological point of view e.g. browsing the web, sending emails, SMS, downloading music/apps, or keeping up with friends on facebook, etc. But also from a geographical point of view, the user's physical location, whether this is seated stationary in a park or shopping centre, where the user may only change location if the connection is poor, or actively mobile while interacting via the Internet, e.g. walking to work/college, while using VoIP/Skype or streaming media clips. Theoretically modelled nodes have an uninterrupted straight path to their next destination in simulations, whereas in the real world this is extremely unlikely to be true with the average human meandering down the street, while concentrating on their mobile device. It is important to determine through simulating the proposed QoS protocols with WiMAX connectivity, whether the perceived improvement will actually function under the planned usage, consequently it is therefore vital to replicate the reality of user behaviour. This work investigates a variety of mobility models including Transportation Theory, Random Walk, and Gauss Markov models, and how it affects connectivity within WiMAX. Each model has been simulated using NS3 and compared to ascertain the most effective method to replicate typical user movement to ensure that today's mobile ad hoc networks (MANETs) have been designed with the mobile user in mind.

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Online Education Trends from Current Teaching and Learning Experiences of Information Systems

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Generating Adaptive Tests for Nondeterministic Systems Modelled by FSM

The importance of testing in the development of various software and systems has been growing steadily with the increasingly crucial role they play in the modern society. Even though testing is a familiar and unavoidable practical activity, the ever growing variety of software-based systems poses big challenges for the development teams. It is not surprising that testing has evolved during the last decades from an ad hoc and under-exposed area of systems development to an important and active research area.

The quest for high quality systems and for a rapid development cycle has demanded testing techniques which are both rigorous and automatic. Model-based testing (MBT) offers techniques which meet these requirements. Model-based testing is an approach that relies on a formal model built to support the testing activity. This approach can offer a number of benefits, such as high fault detection ratio, reduced cost and time, traceability, and ease of handling requirements evolution.

In many situations, the behavior of a system under test appears to be non-deterministic from the tester's viewpoint. This may happen because of the chosen level of abstraction is rather high or the tester has limited observations and/or control over the system. In these cases, the model of a non-deterministic Finite State Machine (FSM) is the starting point for test generation. Due to non-determinism, tests should be adaptive in the sense that test stimuli depend on the system's reaction on a previous stimulus.

The paper presents the latest results of the authors' research on test generation from non-deterministic FSMs. In particular it suggests a method for constructing adaptive tests which guarantee a complete coverage of implementation faults which do not increase the number of states above a predefined limit.

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Dynamic External Merger Sort for Partial Group-by in Optimization

Group-by and merge have a tendency to compete each other for selecting a join path because both of them are the row reduction. Even though the group-by has a tendency to reduce more rows than its rival merge, it has failed to yield a lower cost. There are many encountered reasons for the failure: The merge join has been developed fully to reduce the cost why the group-by is recently a focused research. In this paper we will provide a few approaches to enhance both techniques. 1) Group-by can be done simultaneously during the sorting process: heap sort and merge to reduce CPU time as well as the I/O time. 2)Packaging the runs of merge sort to increase the output size, hence to reduce the I/O time. 3) Provide the file structure to enhance group-by to avoid reading the entire large table from the hard drives. In this case we obtain a significant reduction in I/O processing. 4) Dynamically to estimate the number of duplicates and use it to select a technique for join path.

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The Use of Scalar Vector Graphics - SVG Pattern in the Human Ear Biometrics

The constant search for availability of information required of the security community the development of techniques which could improve even more this control, for this has been developed various mechanisms which seek to increase the ability to control access to information such as: methods of encryption and biometrics, a technique strengthening the other. Biometrics is a branch of information security that uses certain human characteristics, individual, biological, that identify a single person, for example, the thumbprint, iris and the human ear. The objective of this study was to conduct a study of the characteristics of the ear, through the images obtained in various angles of people with different ages, genders, races and more later converting them into Scalable Vector Graphics-SVG, this format use mathematical relations to represent his primitives: circle, line, curves, rectangle, ellipse, still offers stands for: paths, cubic and quadratic Bezier curves. SVG is a standard XML (*Extensible Markup Language*), regulated by the World Wide Web Consortium (W3C) used for transporting metadata on a network of computers. The results showed the existence of certain individual characteristics included in vector graphics primitives that compose the SVG pattern, that were obtained after the process of converting images of type rasters/grayscale/SVG. There are several advantages of using this format, among them stand out, the little effort in computational image recovery for both poor and rich clients in a variety of media broadcasts disabled, because only texts are transferred across the network, another important factor of vector images, opposite the images of type rasters, is its ability to expand without suffering distortions, thus allowing and a resource for search machines.

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Use of Honeytokens in Database Security

This paper looks at how Honeytokens can be designed to attract and trace illicit uses of data and can be implemented to catch one of the most dangerous threats, the trusted insider.

Data and Information stored in companies' databases is often considered as one of their most valuable assets; and as a result, ensuring their security is of significant importance. To gain competitive advantage organisations are adopting the paradigm of access to data anytime, anywhere for employees and also customers. This brings changes to the IT landscape including remote access for employees, virtualisation, cloud provisioning, mobile devices and the growing interest in Bring Your Own Device (BYOD). Each of these strategies increases security risk, particularly from insider attack. Any privacy failure, or even the mere perceived failure to protect customer data, can result in loss of consumer trust, affect customer retention, cause significant damage to brand and company reputation, or lead to civil penalties.

Despite huge investments in database security the global statistics for data security indicate that breaches have been on the increase. Also of concern is the fact that when these leaks occur, it can take system administrators weeks and in many cases months before they are aware that a security breach has happened. In this time the damage inflicted by its perpetrators may have reached sizable proportions.

Mechanisms such as authentication, privilege management, views, firewalls, intrusion detection tools auditing and logging have become standard database security tools. However, as the methods of attack increase in number and sophistication, interest in more aggressive forms of defence to supplement existing methods need to be developed. [1]

Identifying key sensitive data and protecting it is a common security strategy, however the task of having to sort through the large volume of files in larger organisations where data is so dispersed, disorganized, and voluminous to determine which data is to be considered as sensitive is too burdensome and resource-intensive a task for most IT departments in organisations to undertake. [2][3] A simple corporate database may have hundreds of thousands of records and this can be

compounded by the hundreds of users who have legitimate access to this data and identifying a leak may be extremely difficult.

A Honeytoken is a digital or information system resource whose value lies in the unauthorized use of that resource. The key to a Honeytoken is that it is enticing, something a hacker views as valuable. It is then integrated into the system and no one should interact with it. Any interaction with a Honeytoken most likely represents unauthorized or malicious activity. Interaction with a Honeytoken would alert the database administrator to a possible attack. The paper will describe and evaluate the development of Honeytokens to trace insiders who are using personal information maliciously.

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Workplace Collaboration in Virtual Worlds: The Role of Social Presence and Individual User Characteristics

Though originally conceived as recreational gaming platforms, virtual worlds (VWs) are now being viewed as having tremendous potential for workplace collaboration. Yet, workplace utilization of VWs continues to remain sporadic. Firms are often confronted with challenges pertaining to VW's acceptability by users for non-recreational workplace applications. In this research, we examine the emergent use intention (EUI) for VWs i.e. the willingness to utilize VWs for purposes other than recreation - for which they were originally designed. Building on prior research on 'user trust in virtual platforms', this research-in-progress paper, theorizes and empirically examines the role of 'social presence' and 'individual user characteristics' within the broad nomological network explaining the relationship of 'user trust' with EUI for VWs. The data for testing the proposed hypotheses comes from a large scale survey of VW users in Singapore. Theoretical and practical implications arising from this study are also discussed.