

2015

Information Technology & Computer Science Abstracts

Eleventh Annual International
Conference on Information
Technology & Computer Science,
18-21 May 2015, Athens, Greece

Edited by Gregory T. Papanikos

THE ATHENS INSTITUTE FOR EDUCATION AND RESEARCH



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Computer Science Abstracts

11th Annual International
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Athens, Greece

Edited by Gregory T. Papanikos

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Preface

This abstract book includes all the summaries of the papers presented at the 11th Annual International Conference on Information Technology & Computer Science, 18-21 May 2015, Athens, Greece, organized by the Computer Research Unit of the Athens Institute for Education and Research. In total there were 33 papers, coming from 18 different countries (Brazil, Canada, China, Croatia, Germany, India, Ireland, Mexico, Morocco, Portugal, Russia, Singapore, Taiwan, The Netherlands, Turkey, UK, Ukraine and USA). The conference was organized into 10 sessions that included areas of Cloud Computing, Smart Technologies, Digital Health, Internet, Telecommunications, Education 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 and/or journals 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
**11th Annual International Conference on Information Technology &
Computer Science, 18-21 May 2015, Athens, Greece**

PROGRAM

Conference Venue: Titania Hotel, 52 Panepistimiou Avenue, Athens, Greece

Organization and Scientific Committee

1. Dr. Gregory T. Papanikos, President, ATINER & Honorary Professor, University of Stirling, UK.
2. Dr. George Poulos, Vice-President of Research, ATINER & Emeritus Professor, University of South Africa, South Africa.
3. Dr. Panagiotis Petratos, Vice President of ICT, ATINER, Fellow, Institution of Engineering and Technology & Professor, Department of Computer Information Systems, California State University, Stanislaus, USA.
4. Dr. Debnath Bhattacharyya, Professor, Department of Computer Science & Engineering, Vignan's Institute of Information Technology, India.
5. Dr. Mario Brun, Director, Centre for Innovation and Development on Education and Technology, Argentina.
6. Dr. Michael Gendron, Professor, Central Connecticut State University, USA.
7. Dr. Constantine Georgakis, Associate Professor, DePaul University, USA.
8. Dr. Bruno Goncalves, Professor, Federal Institute of Education, Brazil.
9. Dr. Igor Gurevich, Senior Researcher, HETNET Consulting Company, Russia.
10. Dr. Dominique Haughton, Professor, Bentley University and Toulouse School of Economics, USA.
11. Dr. Tony Ikpomwosa Obaseki, Systems Librarian, University Library, Ambrose Alli University, Nigeria.
12. Dr. Bakhytkul Kaskatayeva, Professor, Kazakh National Pedagogical University, Kazakhstan.
13. Dr. Fotis Liarokapis, Senior Lecturer, Coventry University, U.K.
14. Dr. Huichuan Liu, Associate Professor, Tamkang University, Taiwan.
15. Dr. Ronald Lodewyck, Professor of Computer Information Systems, California State University, Stanislaus, USA.
16. Dr. Barbara Nicolai (C.V.), Professor, Purdue University, USA.
17. Dr. Timothy Oyebisi (C.V.), Professor, Obafemi Awolowo University, Nigeria.
18. Dr. Yiannis Papadopoulos (C.V.), Professor, Chair of Computer Science, University of Hull, UK.
19. Dr. Vasos Pavlika, (C.V.), Senior lecturer Software Engineering, University of Westminster, U.K.
20. Dr. Irena Pevac (C.V.), Professor, Central Connecticut State University, USA.
21. Dr. Abdel-Badeeh Salem (C.V.), Professor, Ain Shams University, Egypt.
22. Dr. Magdy Shayboub Ali Mahmoud (C.V.), Assistant Professor, Suez Canal University, Egypt.
23. Dr. Kiran Sree Pokkuluri (C.V.), Professor, Department of CSE, Shri Vishnu Engineering College for Women, India.
24. Dr. Thanga Thangamani (C.V.), Assistant Professor, Kongu Engineering College, India.
25. Dr. Theodore Trafalis (C.V.), Professor of Industrial and Systems Engineering, The University of Oklahoma, USA.
26. Dr. Tzvetalin Vassilev (C.V.), Associate Professor, Nipissing University, Canada.
27. Dr. Stilianos Vidalis (C.V.), Senior Lecturer, University of Wales, Newport, U.K.

28. Dr. Weiwei Zhu (C.V.), Assistant Professor, Department of Math and Computer Science, University of Maryland Eastern Shore, USA.
29. Ms. Olga Gkounta, Researcher, ATINER.

Administration

Stavroula Kyritsi, Konstantinos Manolidis, Katerina Maraki & Kostas Spiropoulos

Monday 18 May 2015

(all sessions include 10 minutes break)

07:30-08:30 Registration and Refreshments

08:30-09:00 (ROOM C) Welcome & Opening Remarks

- Dr. Gregory T. Papanikos, President, ATINER & Honorary Professor, University of Stirling, UK.
- Dr. George Poulos, Vice-President of Research, ATINER & Emeritus Professor, University of South Africa, South Africa.
- Dr. Alexander Makedon, Head, Education Research Unit, ATINER & Professor of Philosophy of Education, Arellano University, Philippines.

09:00-11:00 Session I (ROOM D): Education and IT*

Chair: George Poulos, Vice-President of Research, ATINER & Emeritus Professor, University of South Africa, South Africa.

1. Carsten Lecon, Professor, Aalen University, Germany. E-Tutorials as an Addition to Higher Education Learning Scenarios.
2. Namdar Mogharreban, Associate Professor, Southern Illinois University, USA. Selection and Ranking of Learning Variables for Creation of Learning Objects.
3. Joeran Pieper, Research Fellow, Ph.D. Student, IACS / FB ETI, University of Applied Sciences Stralsund, Germany. Exploring the Essence of Software Engineering in Academic Education – An Integrated Game-Based Approach.
4. Roger Hill, Professor, University of Georgia, USA. Robotics Curriculum for Integrated STEM Instruction.

**Jointly organized with the Education Research Unit of ATINER*

11:00-12:30 Session II (ROOM D): Online and Distance Education and Other Issues I*

Chair: *Christina Zarcadoolas, Professor, City University of New York, USA.

1. Gang Chen, Deputy Director, Shanghai Jiaotong University, China & Ruimin Shen, Director, Shanghai Jiaotong University, China. Thinking about MOOCs. (Monday, 18th of May 2015)
2. Nize Maria Campos Pellanda, Professor, Universidade de Santa Cruz do Sul, Brazil. The Technical Object as a Cognition / Subjectivity Tool.
3. *Francisco Javier Delgado Cepeda, Professor, Instituto Tecnológico de Monterrey, Mexico, Ruben Dario Santiago-Acosta & Lourdes Quezada-Batalla. Widget Based Learning in Math and Physics Undergraduate Courses as Blended Learning Approach. (Monday, 18th of May 2015)
4. Mary Ellis, Senior Lecturer, National Institute of Education, Singapore & Anitha Devi Pillai, Lecturer, National Institute of Education, Singapore. The Information Seeking Behaviour of Academic Discourse Skills (ALS) Students and Effect on Student Research Papers.

**Jointly organized with the Education Research Unit of ATINER*

12:30-14:00 Session III (ROOM D): Online and Distance Education and Other Issues II*

Chair: *Francisco Javier Delgado Cepeda, Professor, Instituto Tecnológico de Monterrey, Mexico

1. *Kamini Jaipal-Jamani, Associate Professor, Brock University, Canada & Candace Figg, Associate Professor, Brock University, Canada. A Study of Gamification as an Instructional Strategy to develop Pre-service Teachers' Knowledge of Technology-enhanced Teaching.
2. Maria de Fatima Goulao, Assistant Professor, Universidade Aberta, Portugal. The e-Activities to Support the Process of Teaching and Learning in Online Context. (Online & Distance Education)
3. Vessela Ilieva, Associate Professor, Utah Valley University, USA. A Model for Teaching Mathematics through Robotics Activities in Elementary School. (Monday, 18th of May 2015)

**Jointly organized with the Education Research Unit of ATINER*

14:00-15:00 Lunch

15:00-16:30 Session IV (ROOM D): Scientific Computing & Smart Technologies I*

Chair: *Kamini Jaipal-Jamani, Associate Professor, Brock University, Canada

1. Stepan Bilan, Professor, State Economy and Technology University of Transport, Ukraine, Mykola Bilan, Head of Control and Dispatch Center, "Transnistrian Radio and Television Center" OJSC, Moldova & Sergii Bilan, Technical Lead, Win-Interactive LLC, Ukraine. Application of Methods of Organization of Cellular Automata to Implement Devices of Forming Pseudorandom Sequences.
2. *Constantinos Sourkounis, Head of EneSys Institute, Ruhr-University Bochum, Germany & Philip Dost, Scientific Assistant, EneSys Institute, Ruhr-University Bochum, Germany. Battery Management System tasks in an Electric Vehicle.
3. *Jan Collie, Ph.D. Student, University of South Wales, U.K. Tracing Forensic Artifacts from USB-Bound Computing Environments on Windows Hosts.

**Jointly organized with the Education Research Unit of ATINER*

16:30-18:00 Session V (ROOM D): Business & Management Systems*

Chair: Stepan Bilan, Professor, State Economy and Technology University of Transport, Ukraine

1. **Rachid Benmoussa, Professor, Cadi Ayyad University, Morocco. An Approach for the Identification of Misalignment in ERP Implementation.
2. Hemant Jain, Roger L. Fitzsimonds Distinguished Scholar and Professor, University of Wisconsin Milwaukee, USA. Service Oriented, Event Driven, Smart Cyber - Agent (SES) Approach for Real Time Management of Global Manufacturing Enterprises. (Monday, 18th of May 2015)
3. Philip Dost, Scientific Assistant, EneSys Institute, Ruhr-University Bochum, Germany & Constantinos Sourkounis, Head of EneSys Institute, Ruhr-University Bochum, Germany. Generalized Lead-Acid based Battery Model used for a Battery Management System.

**Jointly organized with the Education Research Unit of ATINER*

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

Tuesday 19 May 2015

(all sessions include 10 minutes break)

08:00-09:45 Session VI (ROOM D): Biomedical and Digital Health*

Chair: *Constantinos Sourkounis, Head of EneSys Institute, Ruhr-University Bochum, Germany

1. *Christina Zarcadoolas, Professor, City University of New York, USA. US Consumer Attitudes and Perceptions about mHealth Privacy and Security. (Bio-Medical and Digital Health)
2. Henriette Nakad-Weststrate, Ph.D. Candidate, Leiden University, The Netherlands, Ton Jongbloed, Professor, Utrecht University, The Netherlands, Jaap Van den Herik, Professor, Leiden University, The Netherlands & Abdel-Badeeh M. Salem, Professor, Ain Shams University, Egypt. The Influence of Artificial Intelligence on Consumer Protection in Dept Collection Proceedings at e-Court, the First Private Online Court of The Netherlands. (Bio-Medical and Digital Health)
3. MengMeng Wu, Student, Wuhan University, China & Shiwen Wu, Lecturer, Wuhan University, China. Consciously Cognizing and Unconsciously Sharing: Undergraduates Process Fake Health Information in the Microblog.

**Jointly organized with the Education Research Unit of ATINER*

09:45-11:30 Session VII (ROOM D): Online and Distance Education and Other Issues III*

Chair: *Till Hanisch, Professor, BW State University, Heidenheim, Germany.

1. Ellen Rose, Professor, University of New Brunswick, Canada. Reflection in Online Learning: A Systematic Literature Review.
2. Valentina Tarkovska, Assistant Lecturer, Dublin Institute of Technology, Ireland, Lucia Morales, Lecturer, Dublin Institute of Technology, Ireland & Amparo Soler-Dominguez, Lecturer, Jaume I University, Spain. Self-Regulated Learning and the Role of ePortfolios in Business Studies.
3. Costantino Thanos, Research Director, Italian National Research Council, Italy. The Future of Digital Scholarship.
4. Abide Coskun Setirek, Research Assistant, Bogazici University, Turkey & Zuhul Tanrikulu, Professor, Bogazici University, Turkey. Mobile Learning - Continued Success or Emerging Problems? (Online and Distance Education).
5. *Elvis Foster, Associate Professor and Chair of Computer Science, Keene State College, USA. Towards Measuring the Impact of Management Support Systems on Contemporary Management. (Tuesday)

**Jointly organized with the Education Research Unit of ATINER*

11:30-13:00 Session VIII (ROOM D): Online and Distance Education and Other Issues IV*

Chair: *Elvis Foster, Associate Professor and Chair of Computer Science, Keene State College, USA.

1. *Till Hanisch, Professor, BW State University, Heidenheim, Germany. The Case for a Functional Internet of Things. (Tuesday Morning)
2. Berrin Yanikkaya, Associate Professor, Yeditepe University, Turkey. We're On the Road to Where?: Teaching Ethics in the Age of Digital Communication.
3. Igor Gurevich, Senior Researcher, HETNET Consulting Company, Russia. Information Characteristics of Physical Systems.

**Jointly organized with the Education Research Unit of ATINER*

13:00-14:00 Lunch

14:00-15:30 Session IX (ROOM D): Scientific Computing & Smart Technologies II

Chair: **Rachid Benmoussa, Professor, Cadi Ayyad University, Morocco.

1. **Robert Kelemen**, IT Adviser of County Prefect's Office, Varazdin County, Croatia, Robertina Zdjelar, Head of Administrative Department for Finance, Budget and Public Procurement, Koprivnica – Krizevci County, Croatia & Vesna Dusak, Full Professor and Faculty of Organization and Informatics Varazdin, University of Zagreb, Croatia. Benchmarking in Regional Government.
2. **Guru Raghavendra Reddy**, Research Scholar, National Institute of Technology, India. A Novel Approach of Co-Occurrence Matrix for Gangue Separation from Iron.
3. **Tzu-Chun Cheng**, Master Student, Chang Gung University, Taiwan, **Chung-Chih Lin**, Associate Professor, Chang Gung University, Taiwan, **Tsang-Chu Yu**, Ph.D. Student, Chang Gung University, Taiwan, **Hsin-Cheng Lin**, Master Student, Chang Gung University, Taiwan, **Ting-Kai Wu**, Master Student, Chang Gung University, Taiwan, **Wun-Ye Name Ku**, Master Student, Chang Gung University, Taiwan, **Wei-Chia Chen**, Assistant, Chang Gung University, Taiwan & **Li-Te Lai**, Assistant, Chang Gung University, Taiwan. The Study of the Physiological Measurement Platform Based on Smart Wearable Technologies.
4. **Murat Ozdemir**, Ph.D. Student, Ondokuz Mayıs University, Turkey. Spam Discrimination with SVM using Mail Headers and Network Basis Tools. (Tuesday, 19th of May 2015)

15:30-17:00 Session X (ROOM D): Cloud Computing, Internet & Telecommunications

Chair: Guru Raghavendra Reddy, Research Scholar, National Institute of Technology, India.

1. **Brett Tjaden**, Professor, James Madison University, USA, **Robert Floodeen**, Research Scientist, Carnegie Mellon University, USA & **John Haller**, Research Scientist, Carnegie Mellon University, USA. Communication among Incident Responders – Phase II

17:30-20:00 Urban Walk (Details during registration)

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

Wednesday 20 May 2015
Cruise: (Details during registration)

Thursday 21 May 2015
Delphi Visit: (Details during registration)

Rachid Benmoussa

Professor, Cadi Ayyad University, Morocco

An Approach for the Identification of Misalignment in ERP Implementation

In the current context of fierce competition, the information systems of companies are increasingly based on “off-the-shelf products” projects such as ERP - Enterprise Resource Planning - systems. Despite they can generate potential benefits, these projects also entail risk. Many ERP integration projects fail because the system is not aligned to the organization’s requirements. This paper proposes an approach for the evaluation of alignment between the company’s real needs and the ERP standard functionalities. It formalized criteria and associated metrics to quantify the extent of the fit between the business and the ERP system. With this approach, we can more easily and finely determine the different alignment and misalignment situations and the decisions that the company can envisage for each situation. Thus, our research contributes to bring practical solutions to the problem of misalignment identification in ERP implementation. The application of the approach is explored through a case study.

Stepan Bilan

Professor, State Economy and Technology University of Transport,
Ukraine

Mykola Bilan

Head of Control and Dispatch Center, "Transnistrian Radio and
Television Center" OJSC, Moldova

&

Sergii Bilan

Technical Lead, Win-Interactive LLC, Ukraine

**Application of Methods of Organization of Cellular
Automata to Implement Devices of Forming Pseudorandom
Sequences**

Pseudo-random sequences generators (PRSG) are used in many branches of science and technology. Particular application they have received in the communications industry in the monitoring of basic parameters of transmission systems. Also, they are one of the main components of modern communication systems in the aspect of data security, which are transmitted. Currently GPRS are organized by many methods and approaches. These include the mathematical and hardware approaches. Mathematical methods are implemented on based of structure of a mathematical model, which allows obtaining non-deterministic sequence of numbers. Mathematical methods are implemented as software as well as hardware. Hardware approaches aimed at circuit implementation of the PRSG. At the moment, a great GPRS development by using cellular automata (CA) obtained. CA make it possible on the each step of the formation of number unpredictably generate a random number at the expense of neighborhood organizations and the transition function. In modern literature, the use of CA for the information security is considered promising. Problems are considered of organization and construction of the CA for the implementation of devices forming the pseudo-random bit sequences and numbers. The paper analyzes of the modern generators of pseudo-random sequences formation. The proposed PRSG are based on the initial random formation of the state of CA and the arbitrary choice of the initial cells. Performed the choice and installation of the neighborhood and a function, which allow forming an excited state of the cells in the next time cycle. Besides, the CA generates additional pseudorandom sequence of bits which take part in the formation of the excited state of each cell. The analysis of the impact of different forms of organization of the neighboring cells on the result of formation of a pseudo-random sequence was performed. Programs that simulate the operation of CA have been developed. Experimental

analysis was carried out to identify the repetitive cycles. It is shown that the constant change of the state of CA cells leads to changes in work of the PRSG. Using the CA has allowed to reduce the amount of feedbacks. On the basis of such an approach been developed variants of schemes CA cells that implement the PRSG. The resulting circuit engineering solutions and computer models made it possible to implement them in modern FPGAs. Based on the results been developed means of streaming encryption and decryption of digital messages in data transmission systems. In addition, the high effect of such PRSG takes place in systems using a steganographic security with the containers, which are the images.

Nize Maria Campos Pellanda

Professor, Universidade de Santa Cruz do Sul, Brazil

The Technical Object as a Cognition / Subjectivity Tool

This paper deals with the description of a survey conducted with two children diagnosed with ASD (Autism Spectrum Disorder) in view of the complexity that does not separate the different dimensions of reality. Thus, we focus on technological coupling human / technical object supporting the assumption that a technical object, at resonating with the cognitive-affective system of a human being, may enhance the processes that are there involved. We opted for touch technology (iPad) for integrating haptic system in our approach because the touchscreen can trigger important neurophysiological mechanisms. **From there we developed our central research question:** By creating a digital environment for individuals with ASD where the axis is the use of the iPad, we signalize some deeply significant cognitive and subjective transformations. How can we explain such self-organizing emergencies in terms of complexification of the subjects in provocative environment? We decided to apply this type of approach that mobilizes autistic children trying to break with traditional and hegemonic treatments used for this type of syndrome that use behavioral base reinforcements, repetitions of meaningless stimuli for the child and therefore not respecting the potential of these autopoietic subjects. Not because they are carriers of a genetic and severe disease that we will not bet in the self-organization of these beings. In this sense, we also count recent studies of neuroplasticity. For this approach, we design a theoretical framework with assumptions born in the cybernetic movement, specifically the studies of H. Maturana and F. Varela (Theory of Biology of Cognition) and Rene Atlan (Theory of complexity from noise). The results were encouraging showing evidence such as these children begin to talk, to communicate better with family and are starting the process of school inclusion. We used a complex methodology consistent with our theoretical stance adopting not categories that fix the reality and essence, but dynamic markers that signalize

We used a complex methodology consistent with our theoretical stance adopting dynamic markers of emergent phenomenon during the monitoring of process, instead of "categories" that fix essence and reality.

Gang Chen

Deputy Director, Shanghai Jiaotong University, China

&

Ruimin Shen

Director, Shanghai Jiaotong University, China

Thinking about MOOCs

Massive Open Online Courses started quickly in top western universities. These free online courses from famous universities push down the walls of traditional classroom and bring great impact to education. The paper discussed the changes MOOCs bring, including learners changed from local small groups to global numerous learners, teaching faculty changed from individual teachers to collaborative teaching teams. Then the paper put forward the nature of MOOCs and gave some general consideration of CNMOOC platform which is under developing as MOOCs, big data and mobile technologies are on the rise.

Tzu-Chun Cheng

Master Student, Chang Gung University, Taiwan

Chung-Chih Lin

Associate Professor, Chang Gung University, Taiwan

Tsang-Chu Yu

Ph.D. Student, Chang Gung University, Taiwan

Hsin-Cheng Lin

Master Student, Chang Gung University, Taiwan

Ting-Kai Wu

Master Student, Chang Gung University, Taiwan

Wun-Ye Name Ku

Master Student, Chang Gung University, Taiwan

Wei-Chia Chen

Assistant, Chang Gung University, Taiwan

&

Li-Te Lai

Assistant, Chang Gung University, Taiwan

The Study of the Physiological Measurement Platform Based on Smart Wearable Technologies

Smart wearable technologies have become more and more popular in recent years, because it can not only monitor your physiological signal in a non-invasive manner but also provide the information of your body condition anytime and anywhere. Furthermore, some doctors also recommend wearable devices to their patients to reduce the total cost in healthcare by avoiding unnecessary hospitalisations and ensuring that those who need urgent care would not be ignored. Therefore, the purpose of this study is to establish a physiological measurement system that provided users to measure physical condition regularly and to maintain good physical health. In this paper, we measure the physiological signal with a smart wristband device which can monitor the heart rate by a light sensor modules and record the posture signal by a motion tracking sensor modules. The smart wristband device is composed of three units: Signal control unit, Signal sensing unit and Wireless connection unit. The signal control unit is responsible to control and memorize the status of the device by an ultra-low power MCU and an EEPROM memory chip. The signal sensing unit combines two physiological signal acquisition modules: A light sensor module to monitor photoplethysmogram (PPG) signal and a motion tracking sensor module to capture the accelerometer signal. The physiological signals captured by the two physiological signal acquisition modules are sent by the wireless connection unit to a smart mobile device which we developed an application on both Android and iOS devices.

A light sensor module that we put over the skin of our wrist is contained a led and a photodiode for the PPG signal measurement. The PPG signal is commonly used to evaluate the periodic changes generated by cardiac contraction and relaxation. However, Individual differences induced skin color, subcutaneous fat and other skin condition will affect the accuracy of evaluating the heart rate. Therefore, we defined the Auto Adjustment Heart Rate Detection State Machine (AAHRDSM) with three cycle states including idle state, learning state and detection state to handle different circumstances. The smart wristband device will automatically adjust the light intensity and signal amplifier value to obtain the optimal PPG signal during learning state. After learning state, it is going to detection state to detect and calculate the heart rate which will be sent to smart mobile device application for further analysis. We provided two difference analysis in the application that is the heart rate recovery (HRR) analysis after effective exercises and the cardiac evaluations after the Harvard Step Test (HST). HRR refers to the heart ability to return to normal level after physical activity. If your heart rate does not recover enough in reasonable time, the application will show some negative feedbacks to remind you may have a heart problem. Because of fitness level and proper function of your heart are measured by the recovery phase, HST is also a good measurement of your cardiac ability after a strenuous exercise. The application will show you the rating of the fitness index base on your age and gender after 5 minutes of HST.

The accelerometer signal captured by motion tracking sensor is used both as a step analysis pedometer and a roll over detector during sleep. We developed a Step Detection State Machine (SDSM) to ensure the accelerometer signal we calculate is not a noise created by other body motion but steps. The SDSM has three cycle states including idle state, learning state and detection state as well, and most of the time the smart wristband device stays at idle state for the purpose of power saving. Once the device has detected steps, it will jump to learning state to evaluate the intensity of the motion and adjust the sensitivity of detection in order to enhance the accuracy of step detection. Besides, the device will check whether it detected the steps continuously during the period of learning state to make sure it excluded calculating the noise signal. On the other hand, we also detected roll over movements during sleep, and classified sleep depth into light sleep stage and deep sleep stage according to the roll over frequency per hour. These results will be transmitted to the smartphone application for sleep quality trend analysis.

Finally, we designed two experiments to validate the accuracy of the physiological measurement system we proposed. The results show that the accuracy of the step detection is 96.29% of a normal walking test,

and it is 93.19% accuracy of the resting heart rate measurement. It proof that the reliability and validity of this study is statistically significant.

Jan Collie

Ph.D. Student, University of South Wales, U.K.

Tracing Forensic Artifacts from USB-Bound Computing Environments on Windows Hosts

This paper proposes that it is possible to extract and analyse artifacts of potential evidential interest from host systems where miniature computing environments have been run from USB connectable devices. The research discussed focuses on Windows systems and includes a comparison of the results obtained following traditional 'static' forensic data collection after conducting a range of user initiated activities. Four software products were evaluated during this research cycle, all of which could be used as anti-forensic tools - associated advertising claims that use of the software will either leave 'no trace' of user activity or 'no personal data' on a host system.

It is shown that the USB-bound environments reviewed create a number of artifacts in both live and unallocated space on Windows hosts which will remain available to the digital forensic examiner after system halt. These include multiple references to identified software and related processes as well as named user activity in Registry keys, the IconCache.db and elsewhere. Artifacts related to program use and data movements will also be retained in live memory (RAM) and it is recommended that this is captured and analysed. Where this is not possible, relevant information originally held in RAM may be written to disk on system shut down and hibernation, opening further opportunities to the analyst.

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&

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Mobile Learning - Continued Success or Emerging Problems?

There are a numerous m-learning initiatives worldwide and some of them end in a failure; however, no more guidelines to assist m-learning initiatives in sustaining an effective mobile learning. The purpose of this paper is to explore the current literature base of the factors driving mobile learning sustainability. Since there is not more research about sustainability of mobile learning, the paper reviews literature in the light of abilities “ability to address current educational needs and intent of m-learning; ability to have potential to be adopted by users; ability to maintain a certain condition indefinitely or make progress; and ability to adapt to possible changes” which define the sustainability of m-learning and were specified in the previous study. Hence, articles were searched using key terms of this definition, which are: needs, adoption, success factors, limitations, challenges, potential changes and risk of mobile learning. Some sustainability issues were handled and discussed under these titles. We can give *mobile network infrastructure, structuring of the pedagogical material, enhancement of the m-learning environment, technological and pedagogical support, security and privacy, health and safety risks, and digital inequality* issues as some examples. This research will enrich the understanding of m-learning sustainability issues and promote future research by providing some perspectives which can be discussed in following studies.

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The e-Activities to Support the Process of Teaching and Learning in Online Context

The development and use of the Internet in education provoked changes in attitudes towards teaching and learning processes, and the role of their agents - e-teachers and e-students, as well as the interaction between them and the learning content. This designation entails changes not only in nomenclature but in particular in the form of face and structure of the learning process, but also what is expected of each of the agents involved. In any process of education activities are a key element as mediators of the teaching-learning process. They can take different styles and meet different objectives depending on the competencies that you wish to achieve. In the context of teaching and learning networked, e-activities play a no less important role. Learning in digital environments allows the use of resources and tools that enable interaction and networked learning, collaborative. In these learning contexts e-activities allow meeting the needs of an e-student independent action as well as the needs of joint and collaborative actions, and building them may alter a more passive posture to a more active and constructive attitude, by the student.

E-activity is the term that is usually applied to the structure for an active and interactive online training. E-activities can be used in many ways, but have some common characteristics.

Our main goal is to present the work in the creation and development of a learning module about e-activities. Throughout our work we will present the methodological options that were behind this structure taking into account, on the one hand, the content to display, and on the other, the way they are displayed and the reasons that led us to adopt that model.

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&

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Generalized Lead-Acid based Battery Model used for a Battery Management System

This paper deals with the determination of a battery model for different designs of lead-acid based batteries. Even though batteries with gelled electrolyte and absorbent glass mat (AGM) batteries are based on the chemistry of common lead-acid batteries they differ in regards to the parameters of a battery model. In this paper several measurement methods for the identification of these parameters are presented. These parameters enable the establishment of a battery model. A precise battery model can provide the basis for a battery management system (BMS). A BMS is required due to the rising number of electrical components in modern vehicles making it necessary to control the current capability of the battery. The results presented in this paper indicate that every battery type needs a specially optimized battery management system as the behaviour and the characteristic qualities vary between the different designs.

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Widget Based Learning in Math and Physics Undergraduate Courses as Blended Learning Approach

Mobile learning has become a technological trend with a very fast time of adoption in education. Actually, with lots of educative Apps and other applications to develop educative products by teachers in an easy way, the perspective is open to innovate in education by implementing several educative technological tools supported by this technology. Today, mobile devices embody the convergence of lots of technologies, ready to enrich education. By including electronic book readers, annotation tools, tools for creation, sensors and composition and easy access to mobile educative sites, they allow enable the device to be used creatively in classrooms and labs.

Current work is a final report of design and initial implementation of outcomes about an educative program based on use and construction of widgets at higher education level for engineering and sciences areas with four main different tools: Wolfram Alpha, Desmos, Math Studio and Mathtab. Project is centred at higher education level for engineering and sciences areas but it can be easily extended to High School students with similar orientation. Applets and widgets were created around of Physics and Mathematics curricula under Project Oriented Learning and Blended Learning methodologies. Two phases for each activity help to develop basic and high level thinking: a) teacher's designed widgets are first used by students to appropriate basic and middle concepts of each specific course, after b) students generate more complex thinking skills by construction of them by selves, by applying that concepts, but involving at this time, different applied situations.

Proposed design is based on curriculum integration to show mathematical, technical and visual representation of problems and concepts being considered. Description of design is shown, when Wolfram Alpha, Desmos, Math Studio and Mathtab widget developers, together support managers tools as Weebly, Google Drive and Jotform tools are combined to set up activities being depicted in terms of teacher-students interaction. Currently, those activities are distributed in three different didactical constructions: a) General purpose Physics and Mathematics widgets, b) Calculus lab based on Desmos, and c)

m.physlab: a mobile physics lab implementing applets and widgets to support data analysis in Physics experimentation.

Additionally, an institutional continuous teachers' training program has been generated to support their technologic development in Math and Physics education, based on these technologies and applications. Training courses involved are completely based on Math and Physics constructions and they are taught by colleagues developing and boosting current project. First outcome of introductory implementation with students is shown.

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&

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The Information Seeking Behaviour of Academic Discourse Skills (ALS) Students and Effect on Student Research Papers

Information literacy and research skills are essential in a global knowledge economy and professional development (Davis, Evans & Hickey, 2006; Waite & Davis 2006). Such skills are increasingly seen as an integral part of teacher education (Shaw, Holbrook, Scevak, Bourke, 2008). While it may be assumed that the acquisition of a degree would result in teachers being active researchers, this is not always true (Robertson & Blacker 2006). Cakmakci (2009) states that the ability to carry out educational research is often cited as an attribute that a teacher should possess, and that teachers benefit from carrying out education research rather than just reading about it (van Zee,1998; Sozbiolir, 2007).

The focus of this funded study was to explore the research process, in particular the information-seeking behaviours, of NIE undergraduate students enrolled in an academic writing class with the eventual aim of developing intervention techniques to improve their ability to evaluate and integrate information into a research assignment.

RQ: What are the information-seeking behaviours feelings, thoughts and actions of pre-service teachers enrolled in an academic writing course at NIE?

The participants were 24 NIE BA students age 18 and above enrolled in ALS 101 (Academic Discourse Skills) January 2013 semester. Student participation in the project was voluntary. Data sources included a Google survey given to 24 students in April 2013 which asked them about their thoughts, feelings and actions regarding the use of sources for their research assignment and the final drafts of their research papers which were submitted in April 2013. Soft copies of the final drafts were accessed from Safe Assignment (plagiarism software which is installed on Blackboard 9, NIE's Learning Management System).

The first stage of the analysis used Kuhlthau's Information Search Process (1983), a constructivist task based model of the research process with predictable actions, thoughts and feelings. This analysis yielded both quantitative (number of responses) and qualitative data (student comments). The second stage was conducted based on Swales (1990) text-analysis model. Rhetorical choices made by the novice writers

showed their understanding of the research paper genre and its sub-genres (Pillai, 2012).

Elvis Foster

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Towards Measuring the Impact of Management Support Systems on Contemporary Management

This paper conducts a qualitative inquiry into the efforts made in evaluating the impact that management support systems (MSSs) have had on contemporary management, and the related theory employed in conducting such evaluations. The paper pursues this dual objective through an extensive literature review on the topic. The paper addresses the related questions of the criteria used to assess the success of such systems, and the impact of such systems based on those criteria. The existing literature provides encouraging accounts of successful implementations of MSS projects. However, the absence of a widely accepted theoretical model for more accurately evaluating the impact of these systems is somewhat glaring. Recognizing this dilemma, the paper makes observations about the existing literature, and proposes a generic MSS evaluation framework for subsequent testing, refinement, and usage.

The paper advances through five sections. Section 1 provides an overview of MSSs, identifying the different categories of software systems that comprise the MSS family. Then in section 2, an account is provided on seminal works in each category of MSSs. Section 3 conducts a critical analysis of the existing literature on MSSs. Section 4 shares some observations drawn from analysis of the literature, and on that basis, proposes a generic MSS Evaluation Framework that may be applied to such systems. Finally, section 5 provides a summary and some concluding remarks.

Igor Gurevich

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Information Characteristics of Physical Systems

The report includes the following questions: Information laws of nature (the laws of informatics): Law simplicity of complex systems. The law of conservation of uncertainty (information). Law endpoint characteristics of complex systems. Ashby's law of requisite Variety. Gödel's incompleteness theorem. The law of complexity systems. The initial heterogeneity of the Universe. Evaluate the growth of heterogeneities as the Universe expands. Expansion of the Universe – the cause and source of information generation. The volume of information generated by the gravitational field. Curvature of space creates uncertainty (information). The volume of information generated in the moving coordinate system. The volume of information generated in the rotating frame.

Till Haenisch

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The Case for a Functional Internet of Things

Internet of Things appliances like light switches, thermostats or other kinds of sensors or actors are especially sensitive to software errors. While minor malfunctions may be acceptable, software bugs might lead to security problems, which cannot be ignored, since they will have consequences in the real world.

Today's method of keeping systems (like operating systems) secure is to patch them permanently to close all discovered bugs. The necessity to patch on a regular base combined with the long lifespan of components like building automation systems results in a configuration management problem that is not acceptable in many settings like private households. It is practically impossible to test systems composed of that many components with different hardware and software versions, so constant updates will sooner or later result in interoperability problems. Imagine a 20 year old doorbell running windows (that means Windows 95 or even older).

Because regular updates are not possible, it is desirable to keep the number of bugs close to zero. One way to lower the number of bugs is small code size and low complexity: Fewer lines of code and lower coupling, especially as few side effects as possible means fewer bugs.

From a high level perspective the data processing in an Internet of Things application can be considered as a set of mathematical functions operating on a stream of values. Each function creates a new stream of values (which might be processed by another function). That means, that the complete functionality can easily be described and programmed in a functional language like elixir, Erlang or Scala.

The key to a successful longterm perspective is very simple, reliable software and not a monoculture of complex operating systems and middleware stacks. And that means functional programming languages.

In this paper a case study is presented which shows that the code size and complexity for a systems which collects and interprets sensor data in an IoT scenario can be reduced using functional programming techniques.

Roger Hill

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Robotics Curriculum for Integrated STEM Instruction

One of the current trends in education for US students is increased emphasis on science, technology, engineering, and mathematics (STEM). The National Academy of Engineering and the National Research Council in the US published a report on integrated STEM in 2014 and it included a framework with goals for integrated STEM instruction. Building STEM literacy, developing a STEM-capable workforce, and boosting interest in STEM were all included.

At the University of Georgia in the US city of Athens, Georgia many of the undergraduate students studying to be elementary teachers take courses that focus on integrated STEM instruction. They are taught that students need to have successful experiences with STEM content during early years of education and explore possible STEM careers. Girls as well as boys are encouraged to consider careers like engineering.

The use of hands-on robotics activities where elementary students assemble and program autonomous robots is a relatively new content area being used in some US elementary schools. A research and curriculum development project was funded and undertaken during the 2014-2015 academic year. The result was a unit of instruction for 5th grade students using robotics to support integrated STEM learning. Research was conducted to evaluate the effectiveness of the materials and to guide revisions. The completed unit will be available during the summer of 2015 under a Creative Commons license so that teachers can download the materials and use them without cost.

The proposed presentation for the 17th Annual International Conference on Education will report the results of this research, explain how barriers to use of robotics as a part of the regular school curriculum were overcome, and provide an overview and description of the materials along with guidance for downloading the teacher guide and student booklet. Plans for future research and curriculum development will also be presented.

Vessela Ilieva

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A Model for Teaching Mathematics through Robotics Activities in Elementary School

Children and adults who proclaim dislike for school mathematics often state as a reason the disconnect of their mathematical learning from real life. When studied out of context, mathematical concepts and formulae challenge learners as they struggle to connect the abstract representation to what is familiar and understandable. Children as young as early elementary grades start forming such negative attitudes, and with lack of meaningful instruction, retain them throughout their school career and often for lifetime. In our highly technological world, many existing and future occupations require advanced quantitative literacy tied with its applications in science, technology, and engineering. Educational structures in the United States promote accordingly a strong emphasis on these areas from elementary school through college. Such initiative requires a teaching workforce trained and confident in engaging young learners in science, technology, engineering, and mathematics (STEM) topics and activities. Teacher education programs need to respond to this need by seeking and implementing innovative approaches that prepare future teachers to teach and integrate STEM subjects in their instructional practice in ways that trigger increased student interest and participation.

This presentation introduces a project that addresses this critical educational need through an implementation of a STEM based after school elementary robotics program. The program partnership involved a School of Education, a neighboring school district, and a local company. The local business provided Lego Mindstorm robotics kits and trained the university students who were primarily elementary education majors how to program and use them, and how to use this knowledge to teach curriculum-based mathematical concepts to elementary age children.

The outcomes of the program were multidimensional, as its effects reflect on two groups of participants: elementary students and pre-service teachers. The pre-service teachers increased their knowledge and experience related to teaching mathematics and STEM integration by using robotics. They had a professionally enriching experience to include on their resume and further their careers. Elementary students were engaged in hands-on experience in STEM subjects integrated in the design, programming, and building of functioning robots. A sought outcome was also their increased interest in and understanding of STEM subjects and occupations. The value and impact of the project

were further enhanced by the effective collaboration between a University and its School of Education and a local school district and a local business, which strengthened the relationship with the community and reinforced the role of such partnerships for educational enrichment and growth.

Hemant Jain

Roger L. Fitzsimonds Distinguished Scholar and Professor, University
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**Service Oriented, Event Driven, Smart Cyber - Agent (SES)
Approach for Real Time Management of Global
Manufacturing Enterprises**

With the explosion of micro to nano-scale embedded devices and sensors in all aspects of manufacturing, the development of control software that takes advantage of the real time data generated by these devices to support real time decision making in a global manufacturing enterprise becomes extremely complex and critical. While the time scales for control decisions are shrinking, the scale and complexity of the systems are increasing. The large volume of data, real time processing requirements, and complexity of the overall operation requires that the software systems are designed and executed in a highly distributed manner. The processing of the data and routine decision making needs to be fragmented at the micro level yet still is coordinated to enable a human decision maker to monitor the operations and take actions.

Based on the latest developments in service oriented architecture, complex event processing, and smart cyber-agent technologies, this research seeks to develop an approach called SES for the composition of systems for real time management of global manufacturing enterprises (GMEs) from existing agents and services. Specifically, we focus on the problem of identifying the appropriate level of granularity for smart cyber-agents, the delegation of appropriate decision making authority and responsibility to these agents, and definition of services along with standard interfaces provided by the smart agents. This research is part of a multi-year effort which is expected to result in a working prototype of the system and development of capabilities to address issues related to advanced manufacturing based on the latest developments in information and communication technologies.

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&

Candace Figg

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A Study of Gamification as an Instructional Strategy to develop Pre-service Teachers' Knowledge of Technology- enhanced Teaching

The current generation of students exhibits a preference for self-directed and personalized learning experiences using laptops, classroom chat rooms, games, digital media creation tools, text messaging, mobile applications, and personal mobile devices (Project Tomorrow, 2013). This shift in how learners perceive the learning environment calls for a shift in teaching pedagogy to meet the learning needs of these students. This paper discusses how *gamification* was used in higher education as an instructional strategy to meet the needs of the digital learner. Gamification, as defined by the *NMC Horizon Report: 2013 Higher Education Edition* (2013) is "the integration of game elements, mechanics, and frameworks in to non-game situations and scenarios" (Johnson et al., 2013, p. 20). The online *GAMIFIED TPACK Teacher Quest* (<http://www.handy4class.com/tpack-teacher-game/>) was developed using Wordpress, and the following game elements were incorporated into the Quest: tasks to complete to a mission badge, a reward badging system for achievements, accumulating points for earning badges, in-class collaborative and cooperative experiences to complete mission tasks, and use of a knowledge map (*Gamified TPACK Teacher Quest* Tracking Sheet) to guide 'game' play. To investigate the effect of the gamified learning environment on pre-service teachers' learning, a qualitative study was conducted, guided by the following questions:

1. In what ways did gamification influence how pre-service teachers learned with technology?
2. How did gamification develop pre-service teachers' understanding of how to teach with technology (or TPACK knowledge)?

Data were collected from 133 pre-service teachers enrolled in six different sections of the technology methods course. Data sources included email interviews with the instructors teaching the technology methods course in which the *Quest* was played, researcher field notes from weekly instructor meetings, instructors' records of student comments, course artifacts created by pre-service teachers and shared

by instructors with permission, and a Socratic questionnaire filled in by pre-service teachers about the design of the *Quest* and using the *Quest* for learning.

The findings of the research study conducted on the gamified technology methods course indicated that gamified learning promoted the development of TPACK knowledge. Pre-service teachers showed their understandings related to how content, pedagogy, and technology interact to promote learning of subject matter content through oral and written articulation (in artifacts created, survey responses, and reflection comments). As well, the findings suggest that pre-service teachers were engaged and motivated by the application of game elements to course content or learning activities that students found mundane or less engaging. As such, gamification may be an effective instructional strategy for motivating higher education students who routinely prepare for course instruction by reading textbooks and background materials. However, the findings from this study describe one instance of how gamification was used as an instructional strategy in a specific context with a specific population of pre-service teachers; findings are therefore not meant to be generalized to a larger pre-service teacher population. The findings provide guidance for teachers and technology educators on how to design courses incorporating gamification as an instructional strategy appropriate for meeting the needs of digital learners. Issues concerning design and implementation as it influenced student engagement and learning are highlighted, and recommendations are made for course development.

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&

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Benchmarking in Regional Government

Regional government in The Republic of Croatia is regulated by Law on local and regional self-government. There are 20 counties and the City of Zagreb as regional government units.

Public sector has been implemented some paradigms for managing internal business processes, risk management, financial management and control, in last 10 years, as it was earlier implemented in private sector.

In this article authors will analyse regional government in The Republic of Croatia, but the main goal of this article is to create benchmark based on four perspectives which are the basis of Balanced Scorecard Method.

Authors will conduct survey in two regional government institutions (counties) and propose a benchmark standard for measuring the efficiency and effectiveness of regional government.

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E-Tutorials as an Addition to Higher Education Learning Scenarios

At universities we observe a great range of different previous knowledge and increasingly weaker mathematical competences of the students – partly due to the less limited qualification rules. In order to support the students there already exist some helpful possibilities – with certain limitations:

- Online courses: Self-made or, for example, via YouTube. It is very time-consuming to create own online courses; and, in general, there is no supervision by a tutor.
- Tutorials: Because of the full timetable, especially in the first semesters, the students sometimes find it difficult make an appointment for common meetings during daytime.
- Individual consultation-hours. Very effective for students, but very personnel-intensive.

To address the challenges we use **e-tutorials** as an addition to the traditional classroom teaching: Some additional tutorials for elementary mathematics take place in a virtual 3D room; the advantages are:

- Tutorials can take place at any time; in practice, the e-tutorials are offered in the evening; the students can participate at home – they do not have to reside at the university personally.
- The students can communicate as a real seminar room.
- The known (or even more) technical environment can be used: interactive whiteboard, application sharing, remote desktop, etc.
- We hope that introverted students are more willing to participate actively as in the real environment, because they are represented as an abstract copy of themselves - the so called avatars, which can serve as a “protective shield”.
- The artificial environment can be adapted to the individual needs of the learning subject.
- The virtual session can be recorded and replayed.

Furthermore, virtual 3D rooms are a good addition for on-the-job training. In this paper we describe the possibilities using virtual 3D rooms as “virtual blended learning” phases, the challenges, the advantages and the feedback of the students as well as the limitations.

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Selection and Ranking of Learning Variables for Creation of Learning Objects

The concept of a learning object capable of self-assembling context-sensitive course content from online sources (the “learning pod”) was first proposed by Mogharreban and Guggenheim (2009). This paper continues that investigation by describing an approach to implementing functionalities for such an environment. The process begins when the learner’s interests and requirements are delineated into parameters which in conjunction with the subject matter are utilized to select and retrieve learning variables by means of crawling the web. Once selected, they are ranked based on the approximate closeness to the learner’s specifications, and stored in such a way as to support the automatic construction of a learning object. The proposed model concentrates on the selection, retrieval, and management processes of learning variables. To acquire the content, the system first selects a web service that has access to the associated subject matter. A ranking procedure is executed to rank the learning variables that are best suited to the learners’ requirements. Once retrieved the learning variables are organized according to their type - text, audio, video, or file objects such as Microsoft Access tables or a spreadsheet charts - and are placed in a repository associated with the learning pod. Depending on the learner’s choice, the output is an eContent file in the form of a presentation, a PDF document, or an HTML file.

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&

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The Influence of Artificial Intelligence on Consumer Protection in Debt Collection Proceedings at e-Court, the First Private Online Court of The Netherlands

Article 6 of the European Convention on Human Rights and Fundamental Freedoms (ECHR) is considered to be the key article for the protection of the legal position of any EU citizen in court proceedings. Even though the article is largely written for criminal cases, subparagraph 1 also sees to civil proceedings. The fundamental rights contained herein are the following: (1) a fair and public hearing, (2) within reasonable time, (3) by an independent and impartial tribunal, (4) established by law, and (5) a publicly pronounced judgment, except in special situations (as described in the article). Article 17 of the Constitution of the Kingdom of the Netherlands has historically contained the provision that “no one can be held off against his free will from the court assigned by the law”.

This paper presents an analysis of the effects of the introduction of Artificial Intelligence (AI) to the position of the consumer in Debt Collection Proceedings. To that purpose we will first discuss the principles of AI as a subdivision of computer science devoted to creating computer software and hardware that mimics - or provides support to - the human mind. We then analyze and discuss the impact of AI on the rights of article 6 ECHR. The analysis is carried out on the basis of data provided by e-Court, the first private online court of the Netherlands. Our analysis shows that a radical shift in our way of thinking in relation to article 6 ECHR is required. The change is fundamental. It arises from two elements of the outcome of this case study, viz. that (1) in our modern era one element is missing in article 6 ECHR, namely the element concerning the costs of legal proceedings, and (2) the assumptions (such as the one that the public courts offer by definition a superior form of justice compared to private courts) on which the article was based, have proved wrong for this particular type of proceedings in the Netherlands. As a result, until these two missing

elements are properly addressed, the legal position of the consumer risks being adversely effected by article 6 ECHR, rather than protected.

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Spam Discrimination with SVM using Mail Headers and Network Basis Tools

Traditional anti-spam techniques like Black and White lists can not provide an effective result for discrimination of emails as a spam or not. According to Business 2 Community, an average user takes about 85 emails per day, which 10 of them are spam [1]. Spammers develop their spam sending methods by the day. They change email domains, ip address, methods, subjects and sender address. Also they can crack valid user's e-mail account, and can send thousands of emails in a minute. However, some of things they cannot able to change are process and format of e-mail headers. Therefore in this work, we have selected e-mail headers to work.

For the purpose of e-mail spam discrimination, some Machine Learning Techniques give good results. The Support Vector Machine (SVM) used in this study is the one of the mostly known Machine Learning Technique and classifications in spam filtering [2]. In this paper, we use mail header features with the help of network based solutions. For RFC Protocol 822 [3], in an e-mail header, some of features we have used are: from - sender email domain is valid or not? Message-Id - is the return path's domain the same as message-id domain? Subject - is the subject valid or not? (has some ascii characters or not?) Date - e-mail sending date is invalid or not? Return-path - is the e-mail's sender address domain same as return path? Message-Id - the domain used in the message-id is valid or not (with SPF check) etc.? All of these create the feature vectors used in our SVM model. In our method, we have checked domain validation using Sender Policy Framework (SPF) [4] records, which is different from other previous works [5,6,7,8,9].

After deciding the model, we use LIBSVM tool of Chih-Chung Chang and Chih-Jen Lin, using linear kernel and radial basis function (rbf) kernel for SVM, in Matlab program for demonstration [10]. As a result, spam discrimination with SVM using mail header and network basis tools (dns and spf check) are more successful than only header used solutions. The proposed model's success rate is about 98,5% for discrimination of emails as spam or ham.

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Exploring the Essence of Software Engineering in Academic Education – An Integrated Game-Based Approach

The development of complex software systems demands for well-educated software engineers, capable to choose the right tools, practices, methods and processes to accomplish dynamic requirements. Key challenges of software engineers today and tomorrow include increasing diversity and the need for shortened delivery times while guaranteeing trustworthy quality. Different scenarios require to consider different aspects and to set different priorities. Software engineering education has to take this diversity into account. It has to offer a well-founded range of knowledge to enable tomorrow's software engineers.

It is broad consent, that beside all technological aspects and tools a profound knowledge about software practices, methods and processes, which describe approaches to the production and evolution of software, are crucial for successful applications of software engineering.

With the *SEMAT Essence Kernel and Language* the SEMAT initiative delivered a language and a kernel which describes the essential elements commonly inherent in all software engineering endeavors. This kernel is designed to be practice and method independent, extensible, practical and actionable. It provides valuable support to teams in all kinds of software engineering endeavors through consistent and continuous health and progress assessment of all relevant dimensions. Its distinct characteristics make the kernel an extremely valuable teaching and learning tool for SE education.

To gain a deep understanding of the kernel and its applications an active engagement with the topic is required. For that purpose different supporting tools were developed by the project team to support an explorative and situated learning arrangement.

This paper describes these tools and proposes an integrated approach to explore the essence of software engineering based on the use of the *SEMAT Essence Kernel* through providing an engaging and motivating learning environment which complements interactive lectures and course projects by utilizing simulation and digital game-based learning.

Guru Raghavendra Reddy

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A Novel Approach of Co-Occurrence Matrix for Gangue Separation from Iron

Ore sorting is a useful tool to remove gangue material from the ore and increase the quality of the ore. The vast development in the area of artificial intelligence allows fast processing of full colour digital images for the preferred investigations. In this paper, a novel approach to separate gangue from iron has been proposed based on colour-texture features of RGB, HSV and YCbCr using two different approaches, based on the co-occurrence matrix. In the first approach, colour-texture features were derived from co-occurrence matrices, which were computed between and within each colour band. In the second approach, colour features were combined with grey scale texture features. The dimensions of the image features were reduced by using the Euclidean Distance ranking. A neural network model was used as a mapping function to separate gangue from iron feed.

Ellen Rose

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Reflection in Online Learning: A Systematic Literature Review

Reflection is a term which appears often in the discourse of education. For many years, it has been identified as an important component of the learning process in face-to-face classrooms (e.g., Boud & Walker, 1985; Dewey, 1933; Hullfish & Smith, 1961), and more recently it is frequently offered as the key to “deep” learning in online environments that seek to transcend mere information delivery (e.g., Kippen, 2003; Quinton & Smallbone, 2010). However, although researchers and instructors agree that reflection is “a crucial link between experience and learning” (Roberts, 2002, p. 40), there is surprisingly little agreement on what it actually means or how it can be fostered in e-learning. For example, some studies report on the use of individual learning experiences, such as journals and e-portfolios, to enhance reflection in online courses, while others see reflection as a more social phenomenon, emerging from a community of learners engaged in collaboration and reflective dialogue. An analysis of the body of research on reflection in online learning reveals not only a lack of consistent understanding about what reflection entails, but also scattered research evidence about reflection “triggers,” or antecedents, in online courses, making it challenging for online instructors to understand how reflection can best be fostered in online environments. The purpose of this systematic review of the literature is therefore to offer a more consolidated picture of the nature of reflection in e-learning.

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Battery Management System Tasks in an Electric Vehicle

Despite a number of advantages of electric vehicles (EV) the sales suffer under various limitations of the EV compared to standard vehicles with combustion engines. The main disadvantage is the ratio between charging time and range. Both is controlled and limited by the accuracy and features of the battery management system (BMS). Accordingly some features limit the charging power and a lack of accuracy or features limit the usable battery energy and therefore the vehicles range.

Influential features of the BMS are discussed and their repercussions on the range and charging time as well as safety are discussed. The main features are parted into passive and active features. Passive features have no direct effect by the BMS if at all than by external controllers such as from the EV or a Quick Charger. Active features allow direct influence on the Battery by active elements. Active elements allow the limitation of current or the control of the batteries temperature. As a battery in EVs consists of numerous cells arranged in stacks or modules another active feature is the cell balancing. Cell balancing allows a higher utilization of the Energy stored in the battery cells. Various realization possibilities of balancing are illustrated in the paper. Passive features give information to the vehicles' control system like the state of charge (SOC), the state of function (SOF) and the state of health (SOH). Depending on the accuracy of the BMS the vehicles' control system may prohibit function before the battery is completely discharged. Various realization opportunities as well as the related influence on the range and the charging time are discussed in the paper to maximize the range - charging ratio.

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Self-Regulated Learning and the Role of ePortfolios in Business Studies

Through a case study supported by observation techniques, and the use of questionnaires to gather data, we explored the use of ePortfolios, as an efficient assessment tool to assist students pursuing a business degree. Our main focus of attention was a postgraduate course, where finance modules were a major component of the degree. We conducted an analysis on the role of ePortfolios in HEIs (Higher Education Institutions) that lasted four academic years (2008 to 2012). Our findings suggest that ePortfolios could be used to facilitate and enhance students' self-regulated learning, where the role of the instructor was viewed as fundamental at early stages of the learning process. Overall, students' judgement of the ePortfolio, as a tool to complement their education was very positive, as they found that their learning experience improved in a significant manner by being able to benefit from breaks on their traditional learning approach. The evidence suggests that ePortfolios could be used to support technical and complex modules under a controlled environment that sustains students to avoid them losing focus on their core studies, but that at the same time they are flexible enough to allow them to be creative and to integrate their own ideas and views while learning. This study allowed us identifying the true potential and value of ePortfolios to support business students. We were able to recognize how the tool could be used to enrich assessment and learning strategies in HEIs that foster student involvement in the learning process. In addition, the tool helped us to bring new dynamics to the traditional learning and teaching model where the student is challenged to take ownership and self-regulate his/her own learning.

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The Future of Digital Scholarship

This paper advocates that connectivity is the technological foundation of the future digital scholarship and argues that the characteristics of modern science, i.e. data-centric, multidisciplinary, open, network-centric and heavily dependent on internet technologies entail the creation of a linked, semantically enhanced scholarly record.

A scholarly record is taken to mean the aggregation of scientific journals, gray literature and conference presentations plus the underlying datasets and other evidence to support the published findings. However, the communications of today's scholars encompass not only journal publications and underlying datasets, but also less formal textual communications and a variety of other work products, many of them made possible by recent advances in information technology. This evolving scholar record can also include news articles, blog postings, tweets, video presentations, artworks, patents, computer code, and other artifacts.

The vision of a world in which all scientific literature and all scientific data are online and interoperating is rapidly becoming a reality. Building linked discipline-specific scientific records will provide crucial support to modern science by producing radical changes in the scientific method, greatly contributing to educating young scholars, revolutionizing scientific publication, and increasing the productivity of scientists. It will produce a shift in scientific practice from advances based on the traditional scientific method to advances being driven by patterns of data. New insights will arise from connections and correlations found between diverse types of information resources. Another shift will be produced in scholarly information seeking behavior; moving rapidly through the linked scholarly record and identifying relevant information on the move will become a fundamental activity.

To make this happen the next generation of CyberScholarly infrastructures must be developed.

By *CyberScholarly Infrastructure* we mean an enabling framework for data, information and knowledge discovery, advanced literature analyses, and new scholar reading and learning practices based on linking and semantic technologies.

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Communication among Incident Responders - Phase II

Responding to some future incident might require significant cooperation by multiple teams or organizations within an incident response community. To study the effectiveness of that cooperation, the Carnegie Mellon® Software Engineering Institute (SEI) conducted a follow-up study using a group of volunteer, autonomous incident response organizations. These organizations completed special, SEI-designed tasks that required them to work together. Both we and the participants noted several practices that either helped or hindered the teams as they worked on our tasks. We will point out several of these observations throughout this paper, and, in the conclusion, present several suggestions gleaned from this study for improving communication among incident responders.

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Consciously Cognizing and Unconsciously Sharing: Undergraduates Process Fake Health Information in the Microblog

Fake health information (FHI) disguise to disseminate health knowledge as the goal, but they go against the scientific rules and logic. FHI overload in social media has been a serious threat to public health, and the way that new media users receive and process the FHI has become an important issue worthy of attention. The paper aims to investigate how undergraduates in the cognitive level and behavior level receive and process FHI in the micro-blog. We use the questionnaire and focus group to investigate undergraduates in Wuhan city. The study analyzes the factors that influence undergraduates to receive and process FHI. The study takes FHI about losing weight, health maintenance (Yangsheng) and food security as examples, two aspects including individual factors and information content will be taken into account. Involvement, risk surveillance, self-efficacy and information source are designed as the independent variables and the information processing strategies (heuristic and systematic processing) .Information processing behavior (Share, forwarding, comment, being a follower) are chosen as the dependent variables. The study found that the involvement, self-efficacy and information source may significantly influence FHI processing strategies and the impact on the system thinking is more power than heuristic thinking, but these factors cannot predict the processing behavior. Then we select 30 volunteers from the respondents and divide them into three groups to explore students' motivation, strategies and paths of FHI receiving and processing in micro-blog. These findings help us observe more subtly how undergraduates process FHI in micro-blog, So as to provide ideas for governing FHI malignant spread in social media.

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We're on the Road to Where?: Teaching Ethics in the Age of Digital Communication

Ethics is a long debated subject in philosophy with no common understanding of what it is. As a subcategory of ethics, communication ethics became one of the most complex areas of study in the field. New media technologies and digital communication tools and ever expanding applications blurred the lines between ethical conduct and misconduct. The redefined categories of news making (such as alternative journalist, citizen journalist, etc.) along with the technological advancements made every single person with a smart phone become a journalist, cameraperson, editor, and photographer, shortly a 'media' person. The use of such technology enabled the silenced groups to speak on their own behalf, yet the downside of this new era seems as the narrowed space for the ethical discussion. From plagiarism on term papers to use of copyrighted material, from the revelation of private sphere matters to online hate speech and gray propaganda the load on communication ethicists became heavier. This paper aims to discuss the major issues on teaching ethics to the communication students in the age of digital communication.

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US Consumer Attitudes and Perceptions about mHealth Privacy and Security

This study examined consumers' attitudes and perceptions regarding mobile health (mHealth) technology use in health care. Twenty-four focus groups with 256 participants were conducted in 5 geographically diverse locations. Participants were also diverse in age, education, race/ethnicity, gender, and rural versus urban settings. Several key themes emerged from the focus groups. Findings suggest that consumer attitudes regarding mHealth privacy/security are highly contextualized, with concerns depending on the type of information being communicated, where and when the information is being accessed, who is accessing or seeing the information, and for what reason. Consumers frequently considered the trade-offs between the privacy/security of using mHealth technologies and their potential benefits. Having control over mHealth privacy/security features and trust with providers were important issues for consumers. Overall, this study found significant diversity in attitudes regarding mHealth privacy/security both within and between traditional demographic groups. Thus, to address consumers' concerns regarding mHealth privacy and security, a one-size-fits-all approach may not be adequate.

Healthcare providers and technology developers should consider tailoring mobile health technology according to how various types of information is communicated in the healthcare setting, as well as, according to the comfort, skills, and concerns individuals have with mobile health technology.

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