Enterprise Management Information Systems

Edited by
Yiannis Papadopoulos and Panagiotis Petratos
University of Hull, California State University Stanislaus

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1

Enterprise Management Information Systems: An Introduction to the Current Volume

Yiannis Papadopoulos, University of Hull, UK
Panagiotis Petratos, California State University Stanislaus, USA

The current volume is a peer reviewed selection of contemporary research papers presented in Athens Hellas during the period of two years 2011 and 2012 and respectively presented at two International Conferences in Information Technology and Computer Science by academic scholars Professors who contribute their research works to the advancement of computer science, computer engineering, management and business information technology as well as many other related disciplines advanced by the rapid progress of information and communications technologies.

It is very fortunate to have such a diverse group of scholars with intercontinental representation. The academics contributing research works to the conferences are all academic scholars from around the world and serve as Professors in numerous Universities from various nations including Australia, United Kingdom, Continental Europe, North and South America and the Continent of Asia.

There is a plethora of advantages for participating in such an intellectual exercise of international caliber. In these ever changing and continuously progressing disciplines of Information Technology and Computer Science new developments are rapidly moving forward, hence the engaged scholars and researchers are kept updated on the current state of the art in their respective field.

This volume is organized into multiple parts. The first part contains a selection of papers under the topic of network information systems, the second part is on the topic of management strategies of information, the third part is on the topic of information assurance and the fourth part is on the topic of human computer interaction and assistive technologies.

It is hoped that the reader of this book will benefit from all the recent advances in every one of the related areas captured herein. This contemporary research book reflects the current state of the art for each of these very fast progressing high technology disciplines.

Network Information Systems

The first paper in this section by Singh R. J., Sen A. K., Sarkar U. K. presents a partitioned stochastic search algorithm which is applied to auctions of multiple items of interest to the bidder in order to determine the ultimate winning strategy and the individual winner for each set of auctioned items.

The second paper by Peart A., Raynsford R., Ross P. presents a research question and answer to trace the origins of distributed denial of service attacks. distributed denial of service attacks identify an unprotected target which is serving clients connected to the internet and then posing as legitimate clients the attackers bombard the target host with unceasing service requests until the host is completely overwhelmed and cannot respond to any service request.

The third paper by Belal A., Rawas S. presents a method to place a limit on the number of possible route changes in data networks. Modern technology incorporated in routers avails routing protocols which are used to determine the shortest path to the destination and open it in order to incur the minimum possible time and cost. These routing protocols update their routing path on a predefined time to find a new optimal route. In this paper the problem of limiting the number of route changes is investigated in a weighted network with a-priori known cost changes.

The fourth paper by Sireteanu N. A. presents a survey of rich internet applications including an investigation of the challenges of using the current rich internet applications technologies in building desktop, web and mobile applications.

The fifth paper by Peart A., Adda M., Goodman A. presents a quality of service investigation of a new redistribution transmission algorithm in WiMAX which is a wireless communication protocol with transmission range capability of 30 miles and a throughput of 72 Mbps with line of sight and 4 miles with no line of sight. These wireless communication protocol characteristics promote mobility, however at the same time maintaining effective quality of service is difficult. Quality of service is challenging to achieve due to unpredictable channel conditions such as signal fading and frequency interference. This paper proposes a quality of service bandwidth allocation algorithm that samples what has been transmitted so far on a periodic basis and compares the actual requirements to the total amount of bandwidth that the subscriber station has allocated to it. If there is a significant difference, the surplus bandwidth allocation can be cut down allowing that bandwidth to be relocated to another subscriber station.

The sixth paper by Dafalla Z.I., Hammoshi M. presents a study of comparative performance evaluation of different transmission control protocol derivatives over Mobile Ad Hoc Networks (Tayade, Sharma, 2011). For the purposes of the study a mobile network model is designed and built in Opnet network simulator and tested over a period of time with various parameters.

Management Strategies of Information

The first paper in this section by Pole R., Jones K., Hole S. Fakher A. presents a tool for the evaluation of online learning environments (Wilson, Stacey, 2004). E-leat is an evaluation tool to assess the quality of e-learning systems in order to measure their success as well as their respective level of user satisfaction. The tool is a modified version of WebQual, an instrument used within the e-commerce sector to evaluate the quality of usability, information and interaction of websites including a section to evaluate the quality of the learning experience, from a participant perspective regardless of their stakeholder status.

The second paper by Valakevičius E. presents a new algorithm based on the Markov process models to price options. In this paper a numerical model is proposed which shows how to model dynamics of asset prices by Markov process in continuous time with countable set of states based on phase type distribution.

The third paper by Mateev M. proposes a new method which reveals how to use spatial data for geographical information systems utilizing Windows Azure which is Microsoft's implementation of Cloud Computing.

The fourth paper by Balloni A. J., Resende P.J.P. Targowski A. proposes a management strategy of socio technical approach to lead Brazil into the future growth and development.

The fifth paper by Todorov N., Kovatcheva T. presents a study of comparative performance evaluation of two different time management standards the Project Management Body of Knowledge PMBOK® Guide and the agile methodologies for managing software development projects. Project Time Management is presented including its underlying processes, inputs, tools, techniques and outputs and identification of corresponding practices in agile software development methodologies which actually implement the items defined in the PMBOK® process.

Information Assurance

The first paper in this section by Oliveira J.I.F. presents piracy protection in embedded systems. The paper presents various forms of attacks to the vulnerabilities of systems, stand out external attacks exploiting flaws left in the project by developers or by software companies who do not consider security as a requirement due to the lack of time or financial resources, or the belief that legal protection should be sufficient. The paper also presents the protection of embedded systems implemented in FPGA using Bitstream encryption code, thereby ensuring intellectual property rights.

The second paper by Dheedan A., Papadopoulos Y., Davis D. presents a distributed on line safety monitor based on assessment model and multi agent system. Agents are hierarchically deployed guided by the knowledge of the

monitoring model and work collaboratively to integrate and deliver safety tasks, both locally at the sub-system levels and globally at the higher level of the monitored system. The benefits of the distributed monitoring system include increasing the flexibility, composability and extensibility of monitoring.

The third paper by Van Beeck K., De Smedt F., Beckers S., Struyf L., Vennekens J. De Samblanx G., Goedem´e T., Tuytelaars T. presents a method for monocular pedestrian tracking from a moving vehicle which is the first stage to lead to a robust automatic detection of vulnerable road users.

The fourth paper by Adachi M., Papadopoulos Y., Sharvia S., Parker D., Tohdo T., Walker M. presents a research project dedicated to optimization of fault tolerance via automatic model transformations. In this paper a design process is presented that integrates system modeling, automated dependability analysis, and evolutionary optimization techniques to achieve the optimization of designs with respect to dependability and cost from the early stages.

The fifth paper by Tafran C., Belal A. presents a study of the bounds on the average code length of a Huffman Code with two and three different code word lengths.

Health Informatics

In this section the first paper by Viies V., Ennet P., Aigro J., Kinks H., Kullamaa R., Ozolit O., Salula A. presents an information system to manage and monitor water resources for Estonia.

The second paper by Jones K., Griffiths, S., Hole, S., Pole R. Gibbins C. presents the internet business of online pharmacies and the ethical issues as well as the health risks involved with such ventures (Goldenberg, 2011).

The third paper by Soviany S., Puscoci S., Jurian M. presents a novel multi-level hierarchical biometric fusion model for medical applications security.

The fourth paper by Pintér B., Vassányi I., Gaál B., Kozmann G. presents a comprehensive expert system called MenuGene for dietary and life style counseling and tracking.

The fifth paper by Kang'a, S.G. presents a Kenyan case study on developing a generic workflow to guide Electronic Medical Records Systems (EMRS) implementation at health facilities in developing countries.

Human Computer Interaction and Assistive Technologies

In this section the first paper by Foster E. C. presents a dynamic menu interface designer. This paper proposes a dynamic menu interface designer (DMID) as a software component with the potential of reducing the overall software development time required in traditional software development projects.

The second paper by Kokabi M. reviews the user interface of software used as a library information system and proposes suggestions as to how to improve the user interface of the software using illustrations presented in the paper.

The third paper by Good A., Gnanayutham P., Sambhanthan A., Panjganj V. presents human computer interaction considerations in designing a Second Life virtual therapeutic community for the support and treatment of people with borderline personality disorder. Human computer interaction theories are surveyed from educational, psychological multimedia and social perspectives (Russ et al. 2012).

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