Special Issue on Information Security and Applications

Guest Editorial

This special issue is partly associated with the 2009 International Work Shop on Information Security and Applications (IWISA 2009), which was held in Qingdao, China in November 2009.While some other manuscripts are solicited from the authors who are not participants of the conference. The purpose of this special issue is to provide a fast publication of extended versions of the high-quality conference papers on software or related to software and also the papers from authors with original high-quality contributions that have neither been published in nor submitted to any journals or refereed conferences. Papers are mainly interdisciplinary research in software related theory and software related techniques to unsolved problems, such as database management, Software Strategy, and embedded software development etc.

We received 21 papers from around the world and selected 10 to be included in the special issue after a thorough and rigorous review process. The presented papers are mainly devoted to discussion on software architecture and software strategy.

In “An Efficient XML Index for Keyword Query with Semantic Path in Database”, Yanzhong Jin et al proposes an XML index structure BTP-Index, composed of XML structure index mechanism which backbone is a Suffix tree, for evaluation of path ([//|/]e1[//|/]e2[//|/]…[//|/]em) of Q, and XML content index mechanism which is based on Tries & Patricia tree, for the evaluation of [text()=str], filtering part of query Q. Using BTP-Index, the author can process query Q efficiently. And the author has proven the effectiveness of BTP index in Relation-XML dual engine database management system..

In “Realtime & Embedded System Testing for Biomedical Applications”, Jinhe Wang,, et al, propose a software testing approach to build a testing architecture for biomedical applications , it can check the reliability based on the failure data observed during software testing and can be applied to make the use of test task more flexible. The reliability of data of the system is computed through the test panel and simulation of the testing system by testing the reliabilities of the individual modules in the embedded system.

In “Color Map and Polynomial Coefficient Map Mapping”, Huijian Han et al proposes an image-based method to fit the reflection mode by a quadratic multinomial. The coefficients of quadratic multinomial will be gained from BTFs and are stored for every texel as polynomial coefficient maps. A picture is taken under well-proportioned environment light as a color map, which the chromaticity is saved. The method can interpolate light effective under varying virtual lighting conditions by color map and coefficient maps and represent the variation of luminance and color for each text independently.

In “A Study on the Framework and Realizing Mechanism of ISEE Based on Product Line”, Jianli Dong et al put forward a new model of integrated software engineering environment based on product line and by using product line automatic production procedure and the management system of modern manufacturing industry for reference, and also the framework and realizing mechanism of the new model is analyzed.

In “Cross-platform Transplant of Embedded Smart Devices”, Jing Zhang et al present the procedures for intelligent devices were designed according to the features of Windows Embedded CE6.0 as well as the characteristics of Visual Studio.net 2005, and the build environment. FmodMp3 player program was designed with managed language and transplanted to different intelligent devices, then the goal of cross-platform transplantation, that “code once written then ran in different platform” is achieved. This paper also gave some advice on how to improve decompile capacity of managed programs.

In “A Metrics Method for Software Architecture Adaptability”, Hong Yang et al presents a new process-oriented metrics for software architecture adaptability based on GQM (Goal Question Metric) approach. This method extends and improves the GQM method. It develops process-oriented processes for metrics modeling, introduces data and validation levels, adds structured description of metrics, and defines new indexes of metrics.

In “ARM Static Library Identification Framework”, Yin Qing et al propose a static library identification framework through studying library as “dcc”, which dynamically extracts binary characteristic file on applications under ARM processor.

In “Solving Flexible Multi-objective JSP Problem Using A Improved Genetic Algorithm”, Meng Lan et al propose an improved genetic algorithm for multi-objective Flexible JSP (job shop scheduling) problem. The algorithm construct the initial solution based on judging similarity strategy and immune mechanisms, proposed a self-adaptation cross and mutation operator, and using simulated annealing algorithm strategy combined with immune mechanisms in the selection operator, the experiment proof shows that, the improved genetic algorithm can improve the performance.

In “Design and Implementation of Safety Expert Information Management System of Coal Mine Based on Fault Tree”, WANG Cheng-gang et al firstly introduce the overall structure and the component of the expert system, illustrate the fault tree analysis method in detail; then describe the key technologies and implementation method of software development and the program is given; finally, explain the important role of system implementation in solving the safety information management problem of coal mine.

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In “A New Community Division based on Coring Graph Clustering”, Peng Ling et al propose A new community finding algorithm, based on the greedy algorithm with graph clustering by computing the density variation sequence and identifying core nodes, number of communities, partition the certain nodes to some belonged community with the similarity of characteristics of communication behavior by continuous readjusting the centrality of the communities.

Hopefully, this Special Issue will contribute to enhancing knowledge in many diverse areas of the software and some software related area. The author wishes to extend his thanks to Dr. Xijun Zhu who have done a lot of work in soliciting papers to this special issue, and to all those who kindly participated as peer reviewers. Their involvement was greatly appreciated.

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Guest Editors:

Feng Gao, Qingdao Technological University, China

Bin Wang, Qingdao Technological University, China

Deyun Yang, Qingdao Technological University, China

Junhu Zhang, Taishan University, China

Shifei Ding, China University of Mining andTechnology, China

Feng Gao graduated from Dalian University of Technology in 2004 with a Ph.D. degree in numerical analysis. He currently is a Professor in the Faculty of Science School of Qingdao Technological University. He has more than 20 research publications, chaired International Conferences and Workshops, and served on the editorial committee of many journals. His current research interest is in approximation theory and its applications.

Bin Wang got his Ph.D. degree in Xian Jiaotong University and currently is a professor with Computer Science Engineering School of Qingdao Technological University. His current research area is trustworthy computing and information security.

Junhu Zhang received his PhD degree in computer science from Peking University, Beijing, China in 2006. He is currently an Assistant Professor of Computer Science at Qingdao Technological University, China. He was a Post-doctor at LIAMA (Sino-French Laboratory for computer Science, Automation and Applied Mathematics) in the institute of Automation, Chinese Academy of Science from 2006 to 2008. His current research interests are on ad-hoc networks, wireless sensor networks, data grids, distributed database systems, peer to-peer systems, embedded systems.

Deyun Yang is a professor with information department of Taishan University.His research area is Data processing and Information Security. He is also the editor of the journal of IEEE Transactions on Signal Processing and Journal of Science in China。

Shifei Ding is a professor with China University of Mining &Technology. His current research interest is Computer science. He serves in many computer science research institutions, chaired many international conferences and he also is the editor of many international journals such as JIS, IFS and INS.